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Combat Crew

strategic air command

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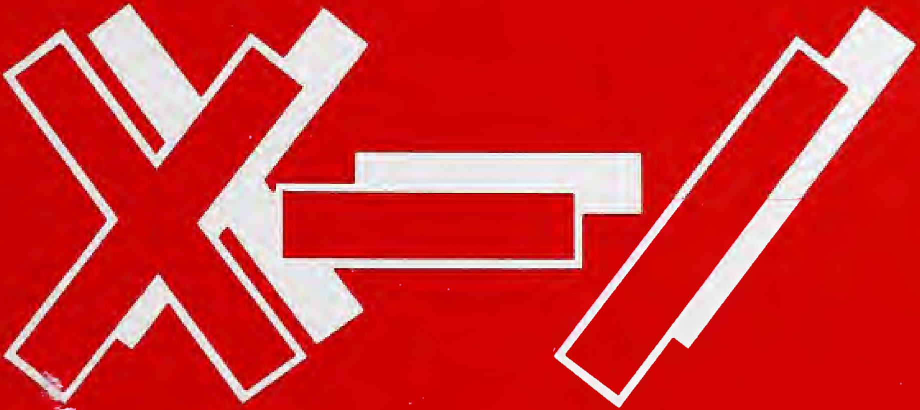
FEBRUARY 1980



IT COSTS VERY LITTLE MORE

Maj John M. Dowling

OKAY, you've passed your standboard. You've got your blue scarf and your baseball cap. You're combat ready — a missile crewmember.

Now what? Where do you go from here? Down the drain with the have-been's, the never-were's, and the can't-quite-hack-it-on-the-way-out's? To Limbo — good and generally acceptable, but could be better? To Valhalla — that special place inhabited by crew members who have really made it — underpaid and overworked by comparative standards, but beyond doubt the finest group of men ever to wear the uniform?

There is no doubt which group you want to join. Too often, however, you and I see someone who appears to be drifting into one of those two first mentioned groups — rarely anyone in the first, fortunately, but more than need be in the second. Just doesn't seem sensible, but it happens. Why? How? And, of more immediate importance, what do you and I do to insure our enrollment in the proper outfit?

The answer lies in just two words: *Crew Professionalism!* To understand these two words let's look at a few shining examples from history. After all, if we can't learn from history, we are compelled to repeat its mistakes . . .

A ragged column marches over a hot, stony desert. The leaders, slowly roasting in their tin suits, are arguing over who'll be king of the next town they conquer. The men behind them are dying by degrees: of thirst, of various unpleasant fevers, and plagued by a lingering thought that over the hill it might be better . . . Now, from *over the hill,* gallops the Saracen host . . .

Ragged but dauntless, they assemble. Complaining there are short rations, a hostile country, and little leadership. But each man whets his sword, as he shivers in the lowland chill. The skirl of the pipes rends the mists asunder, and the clansmen — highlanders: fierce warriors to the man — shriek their way out of the dawn . . . straight into the mouths of the guns, and the end of Stuart pretensions to the throne of England . . .

Scimitars and lances brandished on high, the Eagles of the Desert rally beneath the green and gold standard of the Mahdi. With the chilling battle cry of the Holy War upon their lips, they charge: to rip themselves to tatters against the hollow square . . .

After a parting glass in memory of the fallen, zealots for Irish home rule seize their rifles and grenades, and sally forth to break their lives and strength — if never their spirits — against the firm line of a dutiful British patrol.

Glorious causes and gallant men all, but lost battles. The common factor, the lesson for today: Professionalism, or better, the lack of it. What makes a professional — whether he be the soldier of yesteryear, or the crewmember of today?

Knowledge, first of all. Between the technique of keeping a keen edge on a bronze sword (no mean trick, that) and that of analyzing a *subsystem red,* there's little distinction, save only time and sophistication.

Esprit de corps, certainly. The old feeling that the best is required of us if the team is to win — and, by golly, it's the team.

Courage, surely. Perhaps not the same kind of courage it once took to lower your visor, couch your lance, and charge into a man four times your size, but courage still, and plenty of it.

So far an unimpeachable list of soldierly virtues, but something's missing. The same thing that makes a smart, brave, gung-ho soldier just that little bit better. Let's try one more historical example.

A rifle brigade. Ghurka rifles: pinned down on a Burmese hilltop. No resupply, no evacuation. Nothing. Except mud, blood, disease, starvation, thirst, and unrelenting enemy fire for weeks and months on end. This brigade lived through — and broke through — and marched as liberators into Mandalay.

What did these little Himalayan fighting men

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Combat Crew

Magazine of the Strategic Air Command · 30th Year of Publication

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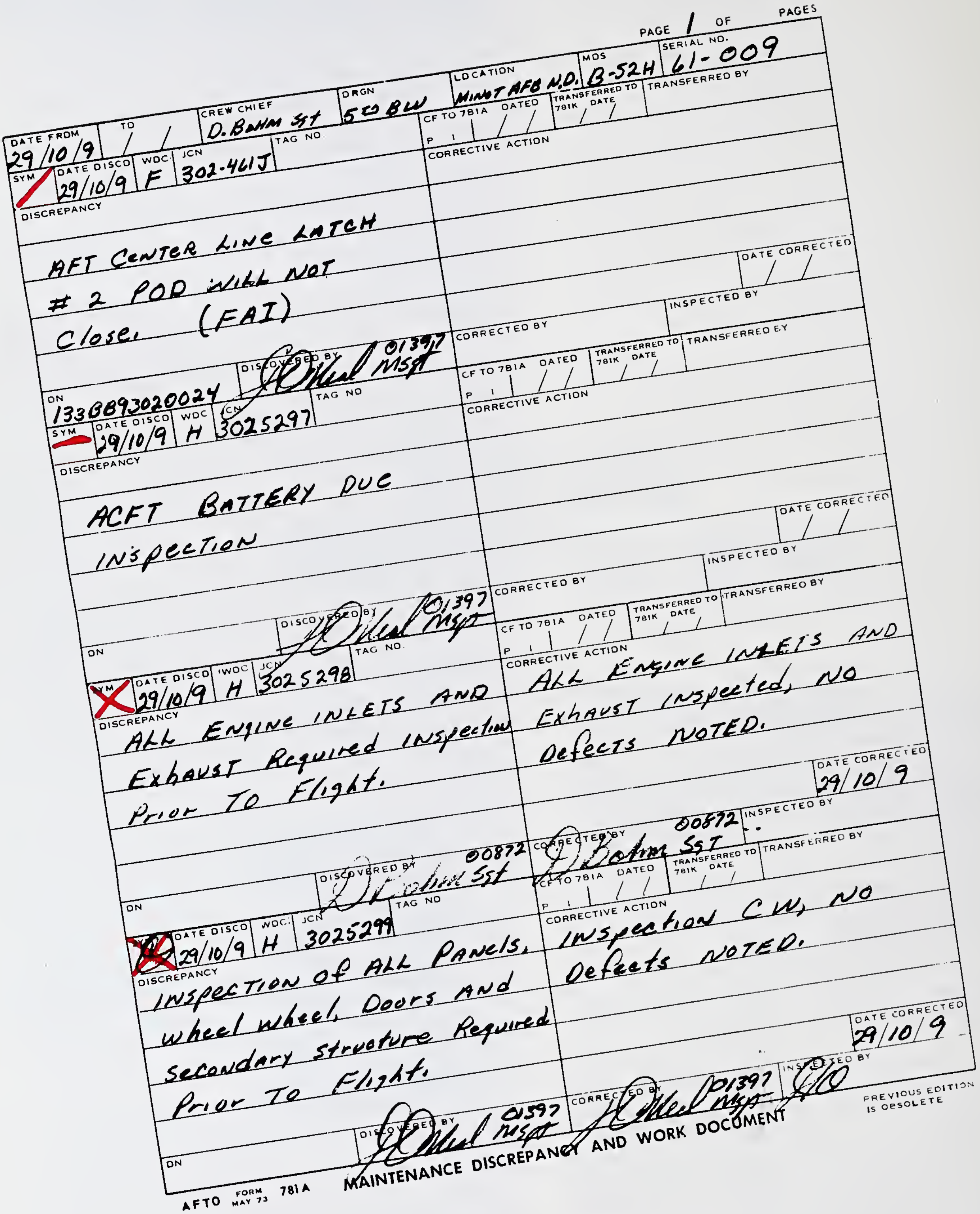
ON OUR COVER

The red X, /, and — are three familiar symbols to crew members. For more on their meaning see page 4.

SACRP 127-1 **VOL. XXX NO. 2** **FEBRUARY 1980**

COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitous. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF, Distribution FX, controlled by IGFC. SAC units submit distribution requests through local PDO.

Subscriptions are available from: The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price: $14.00 per year domestic; $17.50 if mailed to a foreign country; or $1.20 single copy. Authority to publish this periodical automatically expires on 26 January 1981, unless its continuance is authorized by the approving authority prior to that date. Contributions are encouraged as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq SAC IGFC, Offutt AFB, Ne. 68113.



PAGE 1 OF PAGES

DATE FROM 29/10/9
TO / /
CREW CHIEF D. Bohm SSt
ORGN 5th BW
LOCATION Minot AFB N.D.
MDS B-52H
SERIAL NO. 61-009

SYM / DATE DISCO 29/10/9 WDC F JCN 302-461J TAG NO
DISCREPANCY
AFT Center Line Latch
2 POD will not
Close. (FAI)
DISCOVERED BY J O'Neal MSgt 01397
ON 133BB93020024

CF TO 781A DATED / / TRANSFERRED TO 781K DATE / / TRANSFERRED BY
P I
CORRECTIVE ACTION
DATE CORRECTED / /
INSPECTED BY
CORRECTED BY

SYM — DATE DISCO 29/10/9 WDC H JCN 3025297 TAG NO
DISCREPANCY
ACFT Battery Due
inspection
DISCOVERED BY J O'Neal MSgt 01397
ON

CF TO 781A DATED / / TRANSFERRED TO 781K DATE / / TRANSFERRED BY
P I
CORRECTIVE ACTION
DATE CORRECTED / /
INSPECTED BY
CORRECTED BY

SYM X DATE DISCO 29/10/9 WDC H JCN 3025298 TAG NO.
DISCREPANCY
All Engine inlets and
Exhaust Required inspection
Prior To Flight.
DISCOVERED BY D Bohm SSt 00872
ON

CF TO 781A DATED / / TRANSFERRED TO 781K DATE / / TRANSFERRED BY
P I
CORRECTIVE ACTION
All Engine inlets and
Exhaust inspected, no
Defects NOTED.
DATE CORRECTED 29/10/9
INSPECTED BY
CORRECTED BY D Bohm SST 00872

SYM X DATE DISCO 29/10/9 WDC H JCN 3025299 TAG NO
DISCREPANCY
inspection of all Panels,
wheel wheel, Doors and
Secondary structure Required
Prior To Flight.
DISCOVERED BY J O'Neal MSgt 01597
ON

CF TO 781A DATED / / TRANSFERRED TO 781K DATE / / TRANSFERRED BY
P I
CORRECTIVE ACTION
inspection C/W, no
Defects NOTED.
DATE CORRECTED 29/10/9
INSPECTED BY JO
CORRECTED BY J O'Neal MSgt 01397

AFTO FORM MAY 73 781A MAINTENANCE DISCREPANCY AND WORK DOCUMENT

PREVIOUS EDITION IS OBSOLETE

FIGURE 1

Block one annotates a discrepancy which does not have to be fixed prior to flight. Block two shows that an inspection is due. Block three has not been completely cleared even though the work has been completed (see text). Block four is a Red X condition which has been properly cleared.

YOU AND THE 781

Maj David G. Miller
5th Bomb Wing, Minot AFB

Flight crews are required by their respective flight manuals to review the aircraft maintenance record AFTO Form 781 prior to every flight. Often, this review consists of leafing through the 781 page by page, starting at the assorted entries and making comments about such things as which engine has the most flying time. Sometimes important items are overlooked by the flight crews.

One reason flight crews have trouble reading the 781 is that they do not know the maintenance language and procedures used. This is not surprising; there is no requirement for initial or recurring training in how to read these forms, but to understand the language in the 781, you need to know the most common symbols and how they are used.

The most common symbols seen by the flight crew are the Red X, the Red Dash, and the Red Diagonal. The Red X represents the most serious possible conditions of the weapon system or equipment. A Red X indicates that the weapon system or equipment is considered unsafe for flight. No one will authorize or direct an aircraft to be flown until the Red X is properly cleared. In addition to the safety-of-flight discrepancies, mandatory Red X entries include the following: maintenance being performed in or around engine air intakes; flight control and throttle control maintenance; egress maintenance (excluding installation of normal aircrew ground safety pins); maintenance performed on the fuel system; electrical or mechanical maintenance being performed on pods, pylons tow seals, or bombs; when any aircraft brake or nose gear steering system is inoperative; when the pitot static system is inoperative; and when aircraft weight and balance information is unknown.

A Red Dash symbol indicates that a required inspection is overdue. The Red Dash indicates that the condition of the equipment is unknown and that, if inspected, a more serious condition may be discovered. Because of these unknowns, a Red Dash is considered more serious than a Red Diagonal.

A Red Diagonal entry indicates that an unsatisfactory condition does exist, however, it is not significantly dangerous to warrant grounding the aircraft. Red Diagonal entries, like Red Dash entries, do not have to be cleared prior to authorizing or directing flight.

The easiest way for a flight crew member to determine if a red symbol entry has been cleared is to check for a black last name initial over the red symbol in the symbol block. Even though the "corrected by" block has been filled out and signed, the discrepancy may not be properly cleared (see Fig. 1). This is especially true of Red X discrepancies. Almost all Red X discrepancies require two signatures for proper clearing. So, check for the black last name initial over the red symbol.

The Red X, Red Dash, and Red Diagonal are normally the only red symbols flight crews will see. There are other red symbols such as a circled Red X, Red N, Red B, and Red C. These are normally cleared before the forms are presented to the flight crew. If you should be confronted with such a symbol, ask maintenance supervision for an explanation.

Red symbols are used throughout the different parts of the 781. One of your first encounters with these symbols will be as you review the forms during your preflight inspection. You will need to be aware of the aircraft status documented in Part H (see Fig. 2).

The 781H provides you, the flight crew, with a summary of maintenance status and servicing information. It also provides a brief account of the maintenance inspections required for the flying activity for the day. These inspections are documented in Blocks 7 and 8.

The inspection the flight crew will normally see annotated in Block 7 is the preflight (PR). Basic postflight (BPO) and thruflight (TH) inspections are recorded in Block 8. Check the preflight validity time by comparing the date/time completed against your takeoff time. In SAC, if the preflight inspection is over 72 hours old, another inspection must be accomplished. The next item of interest is the Status Today Block.

Block 9 entries summarize the aircraft status as it changes throughout the day. The red symbol entry depicting the most serious current condition will be placed in the first available box. If no discrepancies exist, a black last-name initial will be found in the

Continued on Page 18

ASSIGNMENT:
EIELSON

Capt Ron Bullard
6 SW, Eielson AFB

It was early May 1977. I was just finishing my TOOS/TASP assignment as an intelligence officer with the SR-71/U-2 unit at Beale. Within 30 days I would be back in my tanker squadron with chances of upgrading to aircraft commander. Beale was a good tanker assignment but my TOOS/TASP assignment had kindled my interest in strategic reconnaissance. So just for the heck of it, I called MPC. I gave them a quick resume over the phone: TOOS/TASP KC-135 copilot, return to flying date: end of May, and 800 or so total flying hours. Then I said, "How about an RC-135 to Offutt?"

MPC replied, "You're just the guy we're looking for. How about an RC-135 to Alaska?"

Alaska? Must be a bad connection!

I repeated, "How about Nebraska?"

And he repeated, "Alaska, when can you leave?"

There were two alternatives. I could stay in tankers for the foreseeable future or take an RC-135 to Alaska. I went home and mentioned the prospect of a PCS to Alaska to my wife who had never been further north than New York City. Mistake!

Approximately 45 days after my initial call to MPC, my sponsor picked me up at the Fairbanks airport. The following is written to answer questions and dispell or confirm rumors about this assignment.

The 24th SRS at Eielson is the only flying squadron under the 6th SW. There is only one other base that has RC-135 squadrons and that is Offutt. The Offutt squadrons handle the RC-135M, U, and V model commitments out of Kadena, Mildenhall, Athens, and Eielson with TDY crew rotations. The 24th SRS PCS crews at Eielson fly their highly specialized RC-135S (nicknamed Cobra Ball) from the infamous island formally known as Shemya AFB, Alaska, often called "The Rock." In addition, the 24th SRS front-end crews fly KC-135's on logistic flights, cargo and pax, to Shemya and on receiver training missions.

We have six front-end crews and six back-end crews in our squadron. A front-end crew consists of a pilot, copilot, navigator one and navigator two.

A back-end crew has a tactical coordinator (EWO crew commander), five EWOs and two enlisted technicians. Navigator one and tactical coordinator (TC) are upgrade positions, meaning all nav's begin as nav two's and all TCs begin as line EWOs. With only six crews, competition can be keen.

All crews, including Stan/Eval, operate on a cycle of two weeks at Shemya and four weeks at Eielson. There are always two crews at the Rock and four crews at home. If everything goes as planned you will spend one-third of your time at the Rock. If you don't believe in the expression, there's no such thing as a sure thing in the Air Force, you will when you leave here. To spend only one-third of the time at the Rock, no one could go on emergency leave, no one could go DNIF, no one would need an instructor at the Rock and all the Busy Relay *Go Home Bird* tankers would land on schedule. Sage advice is to plan on going to the Rock early and coming home late. Forty percent TDY is a more accurate figure,

but this includes a few trips a year to the lower 48.

On a typical changeover morning, the 24th SRS crew assembles at the designated tanker for takeoff to the Rock. Three and a half hours later, the crew has the unenviable task of trying to land in some of the world's worst weather. Shemya has a richly deserved reputation for strong crosswinds, fog, and low ceilings. Everything bad you have heard about Shemya weather is probably true. Assuming the landing does take place (about 10% do not) the go-home crew is sure glad to see you. Your reward for landing at the Rock is an all expense paid two week visit, air fare included. Your accommodations (double occupancy, of course) will be in rustic aircraft hangars with a suspiciously authentic WWII look about them. Not to fear, only one crew per hangar (sorry, only one latrine per crew). After nearly 15 years the crew quarters are being carpeted and getting real drawstring curtains, never mind the color. The rooms have black and white TV and there is free color TV in the lounge. You can watch any TV station you want as long as it's Channel 13. There's a racquetball court and basketball court in hangar three and a sauna and volleyball court in hangar two. Complete island tours lasting 20 minutes are conducted most every afternoon, although there's talk of shortening the tours to five minutes. There are a few attractions at the Rock such as the California Sea Lion Rookery just offshore or beachcombing.

The flying at Shemya is by far the best part of this assignment. Unfortunately, it usually comes in spurts, feast or famine. One crew (front-end and back-end) is primary to fly and the other is secondary. The aircraft is cocked inside one of the two SAC hangars. The primary crew responds with all due haste to the Klaxon. We run to the aircraft, and the maintenance crew backs us out of the hangar. At this point, our mission diverges completely from SAC alert/taxi exercises. When we get to the end of the runway, we take off. It is a real challenge to come out of a sound sleep and get any aircraft in the air, much less the Cobra Ball.

Compared to a tanker, the RC-135 is a Cadillac: reversible fan jets, stellar/inertial system, LORAN C, SATCOM, dual TACANS/VORs/VHFs/UHFs/ADFs/HFs/stab trim indicators/air conditioning packs, electric flaps, white sidewall tires and backup lights. The flight director systems are built into the glare shield, the galley has two ovens to complement the refrigerator and freezer, and get this: a flush toilet with a door on it, that as you lock it, wipes out the little "vacant" sign and puts "occupied" in its place (just like an airliner). Add all that weird Buck Rogers stuff that the EWOs play with and you're in the recce business.

Once airborne at Shemya, we accelerate to maximum airspeed in order to arrive at our operating location ASAP. The aforementioned stellar/inertial system is a tremendous aid for the precise positioning required. Upon arrival at the operating area, the EWO crew takes over and collects extremely time sensitive, highly perishable data. The data collection occasionally borders on the spectacular and in every case is thrilling. The EWO crew commander, TC, makes highly critical decisions pertaining to the collection that could easily make or break the mission. The TC has only a few minutes to determine when and where to position aircraft and how to configure the sensors for optimum collection. The TC runs the show and makes the decisions. The collection will be briefed to the JCS so the responsibility and pressure are high.

Once the EWOs are finished, the front-end crew has the responsibility of getting the bird back to Shemya. This can involve several missed approaches. Enough fuel is retained to divert to Eielson, the rest is used trying to land at Shemya. If you have a weakness in your instrument flying or crosswind landings, flying into and out of Shemya will bring it out. You will need all the skill you can muster.

Once your two weeks are up and the Busy Relay tanker lands with your replacement aboard, you go home looking forward to either a beautiful summer or a miserable winter.

I'll give the bad news first. The first snow is usually in September or October. Daylight gets down to four or five hours a day in late December and 50 below zero or colder temperatures are common. We have occasional warm spells (minus 10 to minus 20) lasting for a couple of weeks. Your car has an electric battery blanket, engine heater, and interior

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RNAV

the Changing Environment

Maj Jimmy N. Lane
55th SRW Offutt

It is no secret that our National Airspace System suffers from an acute supply-and-demand inequity. The air traffic demand on available route structure is often severe — sometimes saturating parts of the system — and promises to increase. Area navigation (RNAV) is being used by a growing number of properly equipped aircraft to relieve aerial traffic congestion and make a commensurate contribution to safety.

What is area navigation? FAA Advisory Circular (AC) 90-45A defines it as "a method of navigation that permits aircraft operations on any desired course within the coverage of station referenced navigation signals or within the limits of self-contained system capability." The key phrase here is "any desired course." Figures 1 & 2 demonstrate the improvement of the RNAV concept. Our present route system produces airways which basically lead directly toward or away from VOR/DME/TACAN ground stations. A cursory examination of a jet airways chart (Fig 1) reveals immediately a limitation of this system: Most of the traffic is concentrated on the jet routes, and most of the airspace off airways is unused. Control of these aerial highways is further exacerbated by transitions to and from the enroute structure and by common ground stations serving both the enroute structure and terminal control areas.

Area navigation, in contrast, provides for straight line routing and congested area bypasses. The elimination of ground station overhead requirements is the primary RNAV advantage. Examine an RNAV enroute chart (Fig 2). Airways flow between terminal areas and are described by waypoints — predetermined positions used for route definition. Waypoints are expressed in geographic coordinates to the tenth of an arc minute and in reference to a selected ground facility. RNAV routes in areas of congestion either service local arrivals and departures or direct overflying traffic around the area. In Fig 2, POPPY is a waypoint servicing Chicago arrivals and departures, and J803R circumnavigates the area as it facilitates traffic between New York and California.

RNAV is much more flexible than a chart inspection indicates. A closer look at the definition of area navigation shows that *all the airspace we have* is included — not just the lines on an RNAV chart. One flexibility of the basic system is the use of parallel offset routes. Suppose an airway is simultaneously used by several aircraft maintaining Mach .80 and others flying Mach .84. Everybody's desired altitude is FL 330. Rather than request airspeed or altitude changes, ATC simply directs the Mach .84 aircraft to fly 20 nautical miles left or right of the parent track. Typical RNAV equipment can accomplish this request without reprogamming waypoints.

In addition to parallel offset routes, area navigation may be used off airways so long as proper procedures for random routes are followed (Re: FAA AC90-63). E-4 crews use this application often between Offutt and Andrews AFBs. Upon reaching flight level from Offutt, a request is made to proceed "area navigation direct to Front Royal VOR." Front Royal is an inbound feeder fix to the Washington, D.C., local flying area. ATC usually clears the crew as requested, whereupon the on-board RNAV equipment is reprogrammed to set a course from present position direct to the waypoint number where Front Royal coordinates had been previously stored. In effect, the E-4 has been cleared to fly an RNAV route from its present position to the requested location — just as if a predetermined airway had been there from the start. The flexibility of this procedure is perhaps more dramatically shown by the E-4's usual return trip to Offutt. Because traffic density

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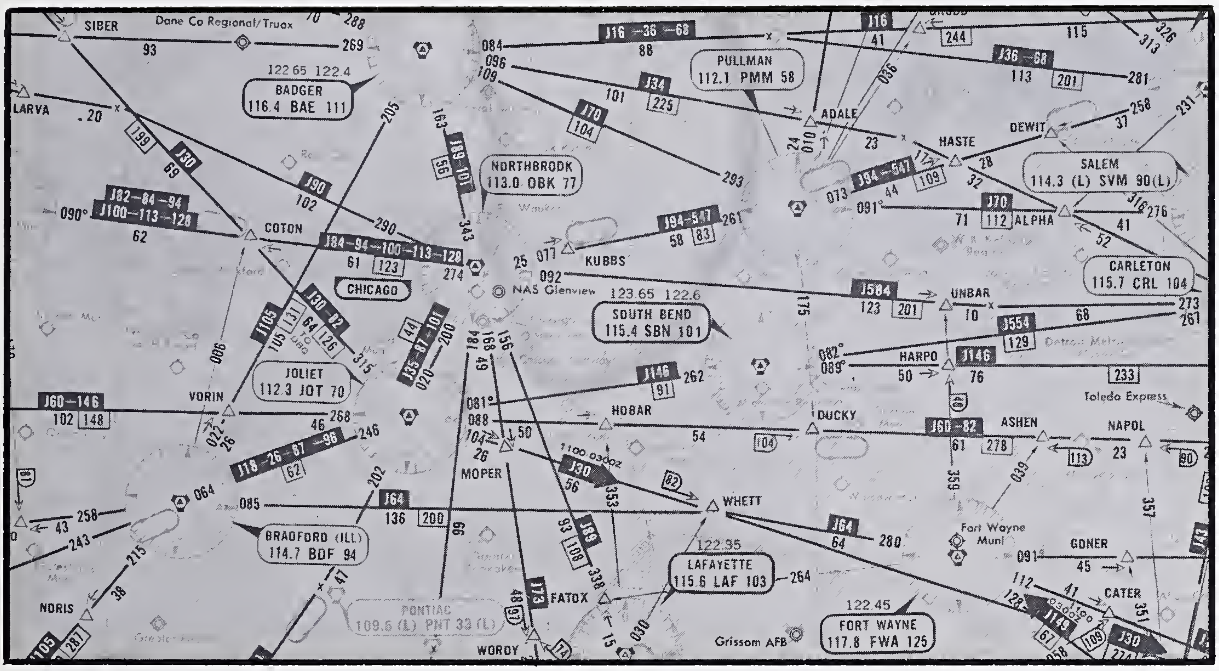
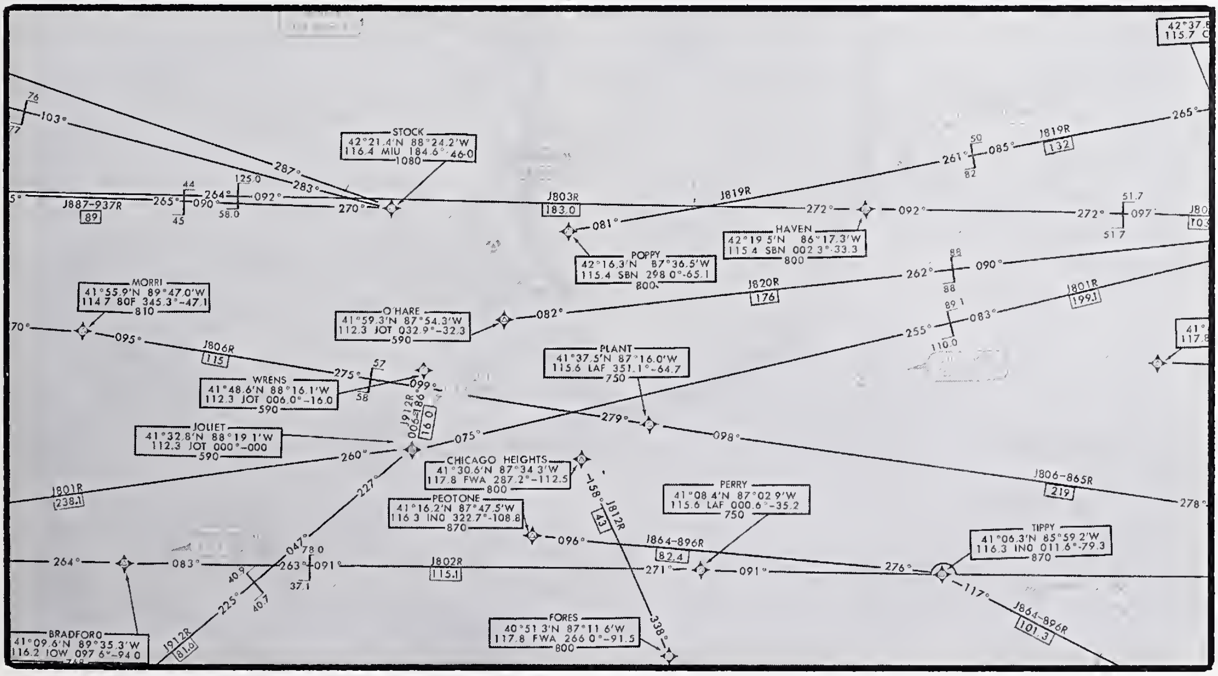


FIGURE 1

FIGURE 2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HAVEN 42°19.5'N 86°17.3'W 115.4 SBN 002.3°-33.3 800
POPPY 42°16.3'N 87°36.5'W 115.4 SBN 298.0°-65.1 800
MORRI 41°55.9'N 89°47.0'W 114.7 BDF 345.3°-47.1 810
O'HARE 41°59.3'N 87°54.3'W 112.3 JOT 032.9°-32.3 590
WRENS 41°48.6'N 88°16.1'W 112.3 JOT 006.0°-16.0 590
PLANT 41°37.5'N 87°16.0'W 115.6 LAF 351.1°-64.7 750
JOLIET 41°32.8'N 88°19.1'W 112.3 JOT 000°-000 590
CHICAGO HEIGHTS 41°30.6'N 87°34.3'W 117.8 FWA 287.2°-112.5 800
PEOTONE 41°16.2'N 87°47.5'W 116.3 INO 322.7°-108.8 870
PERRY 41°08.4'N 87°02.9'W 115.6 LAF 000.6°-35.2 750
TIPPY 41°06.3'N 85°59.2'W 116.3 INO 011.6°-79.3 870
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BRADFORD 41°09.6'N 89°35.3'W 116.2 IOW 097.6°-94.0
J887-937R 89
J803R 183.0
J819R 132
J820R 176
J801R 199.1
J806R 115
J912R 16.0
J801R 238.1
J806-865R 219
J802R 115.1
J864-896R 82.4
J812R 43
J864-896R 101.3
J912R 81.6

a letter to Mike

Capt David R. Hall
1 CEVG, Barksdale AFB

Dear Mike,

We enjoyed your letter last week. Glad to hear you got that upgrade slot and are approaching your stanboard check. As you asked, I've put together a few ideas on how to pass an evaluation. No, I am not going to talk to you about the usual stuff — the mission planning, preparation, effective use of training time, and knowing your job. Those are certainly the most important considerations, but I'll leave the inspirational speeches to the squadron commanders. What I am going to discuss are some of the subjective concerns.

Don't let the word "subjective" scare you when talking about SAC evaluations. I am fully aware of what SACR 50-6 says about objectivity, but the evaluator is not a machine. At times he will be subjective. The AF Form 8 and SAC Form 817 should never reflect this subjectivity, but those forms are just the final paperwork. Your more immediate concern appears to be the way the evaluation is conducted and how to make the flight go smoother. Maybe it is important to look at the evaluation from the evaluator's point of view.

Since your letter, I have sat down with several of the other evaluators and asked for their ideas, pet peeves, and examples of things that might cloud their perspective. It is an interesting list.

First Impressions. First impressions are entirely subjective, but extremely important. I don't mean just haircuts and spit shined shoes. Your attitude is more important. A checkride is not a personal affront, but a quality control on our training program. If you are frustrated by the evaluator's presence, try not to let it show. Instead, show the evaluator your confidence and preparation with a professional mission overview. The evaluator knows you are at least a little apprehensive, so just relax, be yourself, and be friendly, but do not go overboard. If you treat him too lightly with the "you guys wanna see where we're gonna go?" routine, he will only be wondering what you are like when you fly by yourself. Put the evaluator at ease. Many techniques described in SACR 50-6, para 3-3 are just as important for you as they are for the evaluator.

An Empty Seat. Handle the airplane as if no one was sitting in the instructor's seat. You might want

to glance at him during oxygen checks, but as long as the evaluator is not turning blue, leave him alone. Sure, he is writing on a pad of paper, but that doesn't mean you have made a mistake. He will note the Highly Qualified Performance just as readily. The evaluator can not be critically attentive for eight continuous hours. He is going to concentrate on certain spots. Some evaluators will expand notes during deadhead time between activities. At least one I know of will write a letter just to help him stay awake. It might not be the best technique, but you can't control it anyway. When you make a decision or change the profile, don't give the evaluator one of those "I know you can't tell me, but how am I doing so far" looks. It is your airplane to use for the day to the best of your ability. The evaluator cannot help you make a decision nor will he give you any reassurance during the flight. If he does speak to you, even to point out a discrepancy, don't equate his action with intervention and automatic Qualification Level III. I realize it is difficult but if you forget the evaluator is there, the ride will go much smoother.

Grading Maze. Know what standards you are graded against. There is no need to memorize every tolerance in the applicable SACR 60-4 grading volume, but knowing what the Qualified standards are allows you to set priorities when the airplane breaks and you are running late. Let me give you an example. During preflight and engine start on a recent CEVG evaluation, a staff member twice entered the cockpit to "help" the crew. He convinced the pilots that their percent MAC was 0.3% in error and therefore their takeoff data was invalid. As a result, the crew spent considerable time recomputing. What they failed to recognize was a major heading system malfunction throughout taxi and attempted takeoff. Now don't get me wrong, I'm all for precision and believe we should all strive for perfection; but 0.3% is well within Highly Qualified standards, does not change the stab trim but 0.1 degree (Highly Qualified), and you would be hard pressed to read the difference on a slip stick or trim wheel.

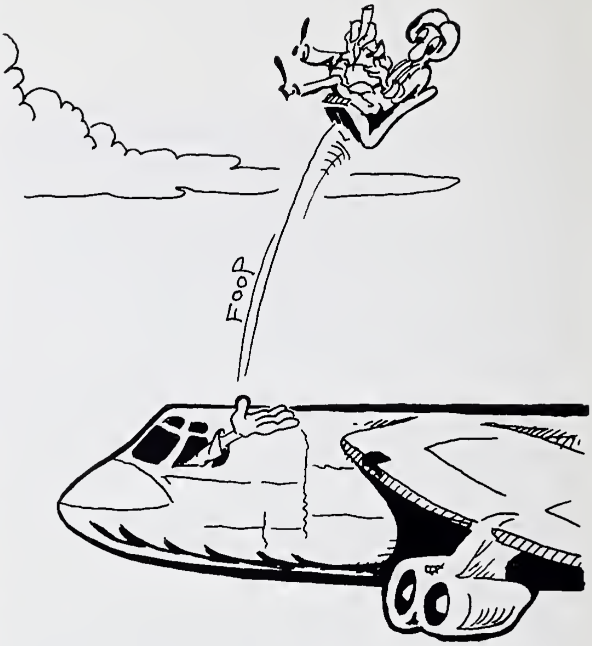
The same awareness of tolerances applies inflight. We have all heard stories about the tanker pilot who tries to impress the evaluator by holding his air refueling airspeed within two knots by constantly jockeying the throttles. Bomber crews have been so intent on low level time control that they have forgotten weapons preparation checklists. Try not to fly the grading maze, but be aware of the SAC standards. Then set your priorities accordingly.

If it Isn't Scheduled, Don't Do It. From the evaluator's perspective, this statement is a myth, but remember we are talking about subjective concerns. From a staff perspective, that first statement might be valid. We all realize that higher headquarters inspections carry an additional weight, so there may be times when you have been briefed not to accomplish any extra activity. For the purpose of this letter, though you must remember that I am writing from an evaluator's standpoint. You will have to make your own decision on extra activity.

If you accept the premise that a checkride really is "another chance to excel," then you might want to consider using the extra gas in the traffic pattern if your low level is canceled. The evaluator will not see anything on the fifth pattern that he did not see on the first two, except your excellent use of training time. You may elect to burn excess fuel off at altitude. Radius clearances in airspace the size of Rhode Island are convenient for staying inside, but a crew often gets into trouble waiting for things to happen. Checklists are forgotten, other training events are abandoned, and crew coordination begins to break down in the interest of burning off fuel in a hurry to land.

The evaluator will usually recommend you use the training time, but a no-notice evaluator from another organization also understands the pressures you may be under. Accomplishing nonscheduled activity is your choice. The evaluator expects you will do well. If you like statistics, from January 1974 through June 1979, 92.0% of 3720 B-52 crewmembers evaluated by 1 CEVG passed as did 94.9% of 5833 EC/KC-135 crewmembers. Your local Stan-Eval tends to be slightly tougher.

Scares and Surprises. There are two things you do not want to do on an evaluation. Do not scare the evaluator, and do not surprise him. Aircraft limitations, several hundred feet off altitude without corrective action, or dangerous attempts at landing will scare the evaluator, and there won't be much discussion on the qualification level. However, momentary deviations can be surprisingly large or long if you take the proper corrective action yourself. Remember evaluators do not enjoy being surprised.



The evaluator does not know what you are thinking. If you are going to deviate from a checklist, tell him. If you need to change the mission profile, make sure the evaluator is aware of your reasons. If a piece of equipment is malfunctioning and you decide to continue its use, advise the evaluator. If you do not keep him informed, the evaluator must assume you are unaware of the malfunction, or omitted the checklist items, and grade accordingly.

Eyewash. Many crews have a tendency to do things aimed solely at impressing the evaluator, which in reality hampers crew coordination. One pilot announced to the evaluator that "Here at Base X, it takes power to taxi up the hill." Unfortunately, the copilot missed part of the ATC clearance being read at the time. Besides, I would be willing to bet the evaluator knew it took power to taxi uphill. A radar navigator kept turning around and informing the evaluator each time a switch was positioned. Other crews feel compelled to read, over interphone, a page and a half of amplified Dash One for a popped circuit breaker. If the action isn't important enough to do everyday, it does not make sense to instigate it just for the evaluator.

Snowballs. Every deviation does not equate to "Unqualified." If you make a mistake, try not to let it snowball into larger errors. If you get into a bind over a missed frequency change during penetration, ask Approach Control for a box pattern while you straighten out the checklist. Don't let your error five minutes ago jeopardize what you need to accomplish now.

No Brainers. Most commanders can forgive an altitude deviation, a time control problem, a poor ECM run, or a nose gear landing. Those areas usually are proficiency type discrepancies, and a strengthened training program will correct the problem. What really hurts are the "No Brainers." Do not let the oxygen discipline, open floor grates, missing checklist pages, and complete states of relaxation, i.e., sleep, catch up with you or your crew. Develop a crew awareness to prevent them.

Challenges. Most people being evaluated have enough problems taking care of their own areas, so they do not have time to hassle the evaluator. At least once, though, every evaluator runs into the evaluatee who feels compelled to challenge everything. If you honestly feel the need to ask the evaluator for two pieces of identification, please don't even jokingly suggest to the security police that you are being harassed by the three guys in the back of the crew bus. The security police also take their job seriously and I guarantee the evaluator's subjective outlook will be quite clouded after several minutes of being spread-eagled and watching the wet grass grow from a distance of two inches. You laugh, but it has happened. The important point to remember is that antagonistic relationships help neither side.

Mike, in reading back through the list, some of the preceeding paragraphs may appear inconsistent. One says to keep the evaluator informed and another says to ignore him. Both are correct in the proper context. It is important to remember that as an evaluatee, you are not doing anything that the evaluator has not done many times himself. He has empathy for your position. If we treat each other with respect, the evaluation will be relatively smooth.

Tell you what — after the checkride I know you must recertify the EWO and ORI sorties, and that you have many things to discuss with your new crew, but how about sitting down on your first alert tour and writing me another letter. Tell me how the checkride went. Tell me some of the things the evaluator did which irritated or annoyed you. Show me a way to do my job more effectively. I promise I am not vindictive.

Some Monday Morning,

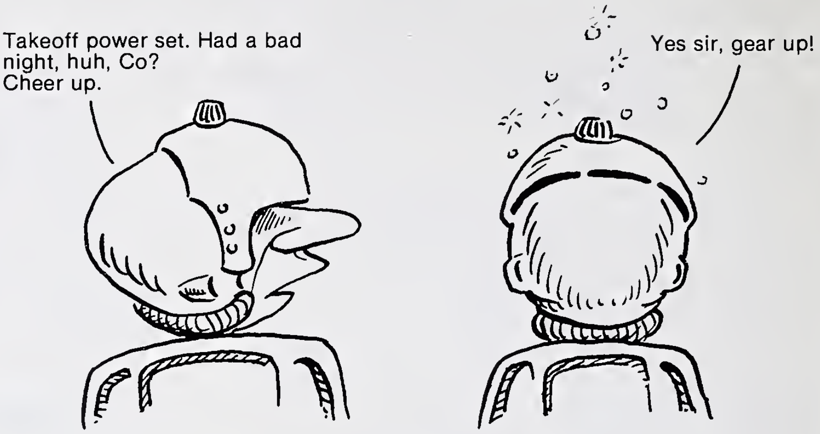
Dave

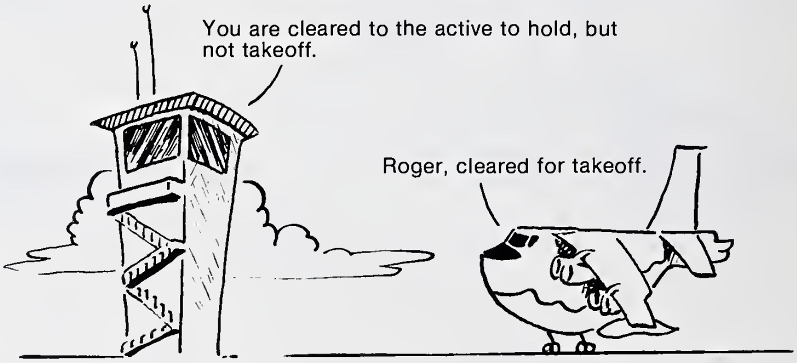
What the Captain Really Means...

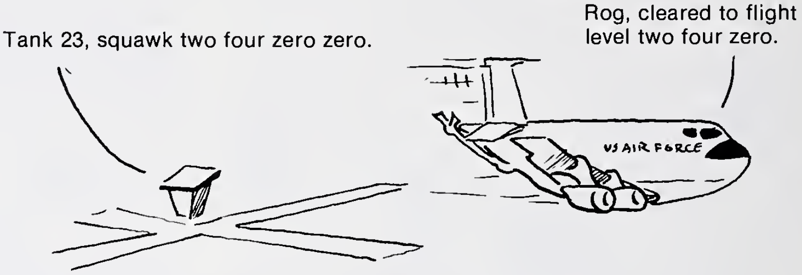
Maj Frank Walker
19 BMW, Robins AFB

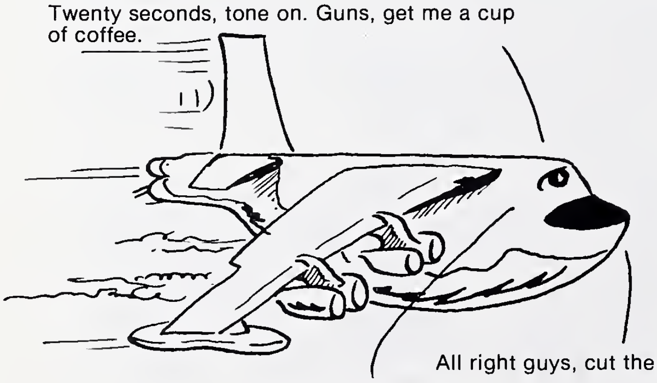
Webster defines communication as "the transmission or reception of information." And every week we hear from another educator how communication is becoming a dying art as the ability to write or speak one's thoughts clearly decreases. Yet as aircrew members, clear, effective communication is a necessary component of a successful and safe flight.

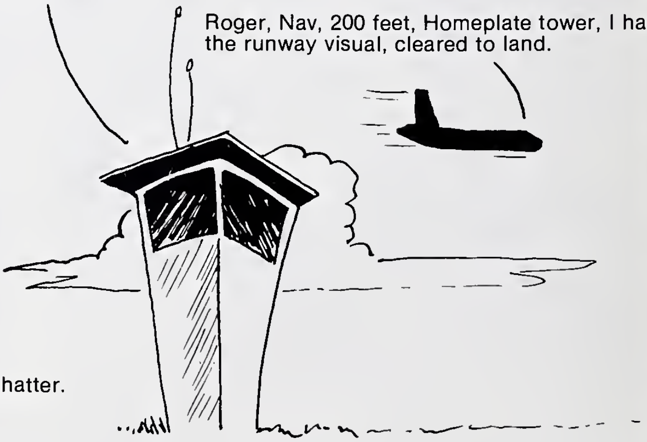
To communicate means not only to speak but to be understood. The old axiom, we hear what we want to hear, is especially true in the flying business. If we expect an altitude change and instead receive a change in transponder code, our first reaction, especially if we're distracted, is to react to what we thought we heard. The disastrous results are obvious. Effective communication really boils down to saying what you mean and meaning what you say. As some of the cartoons show: Non-specific radio transmissions can be hazardous to your health. Or, what the captain really means is . . .


Takeoff power set. Had a bad night, huh, Co? Cheer up.
Yes sir, gear up!


You are cleared to the active to hold, but not takeoff.
Roger, cleared for takeoff.


Tank 23, squawk two four zero zero.
Rog, cleared to flight level two four zero.
US AIR FORCE


Twenty seconds, tone on. Guns, get me a cup of coffee.
11
All right guys, cut the chatter.
Roger, sir, tone cut.


Buff 11, cleared for a low approach, I don't have visual confirmation for you to land.
Roger, Nav, 200 feet, Homeplate tower, I have the runway visual, cleared to land.

RNAV

Continued from Page 9

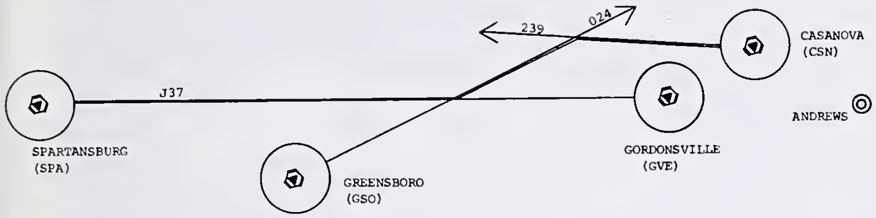
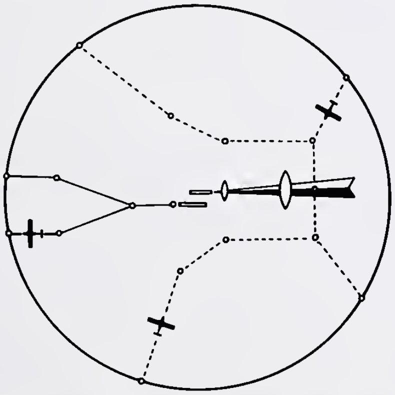


FIGURE 3 ANDREWS PREFERRED SOUTHWEST DEPARTURE

in the Omaha area does not demand strict usage of feeder fixes into the TCA, the E-4 crew (at flight level from Andrews) requests clearance direct to the expected initial approach fix (IAF) at Offutt. ATC then requests IAF coordinates, which the crew provides. After checking the resulting route through the computer system, the controller generally clears the E-4 as requested. Now that's the way to fly!

Aircrews and controllers alike benefit from the flexibility of area navigation. Because RNAV routes do not frequently converge with other airways over common VORs, the potential for traffic conflict is significantly reduced. Aircrews appreciate the corresponding reduction of ATC vectors and altitude changes, and controllers appreciate the reduced need to request them. The author once used RNAV routes on a flight from Andrews AFB to Honolulu. After departing the Washington TCA, periodic frequency changes comprised the only ATC coordination until receiving the overwater clearance to Hawaii from Los Angeles Center.

FIGURE 4



TYPICAL RNAV ARRIVAL AND DEPARTURE ROUTE CONFIGURATION

Don't miss the point here that enroute safety has been given a shot in the arm! Though area navigation is providing for a greater amount of air traffic, it also distributes that traffic in a more orderly fashion. Aviators' and controllers' workloads are less because the safety factor is greater.

Area navigation is made possible by on-board equipment that meets FAA performance specifications. This equipment may include doppler radar, inertial systems, or pictorial display/course line computers. Typical RNAV equipment in use today requires VOR/DME signals for aircraft position updating, although such updating is not required for FAA certification. In addition to minimum requirements, more sophisticated equipment may include automatic track smoothing, turn anticipation, parallel offset, and vertical waypoint features.

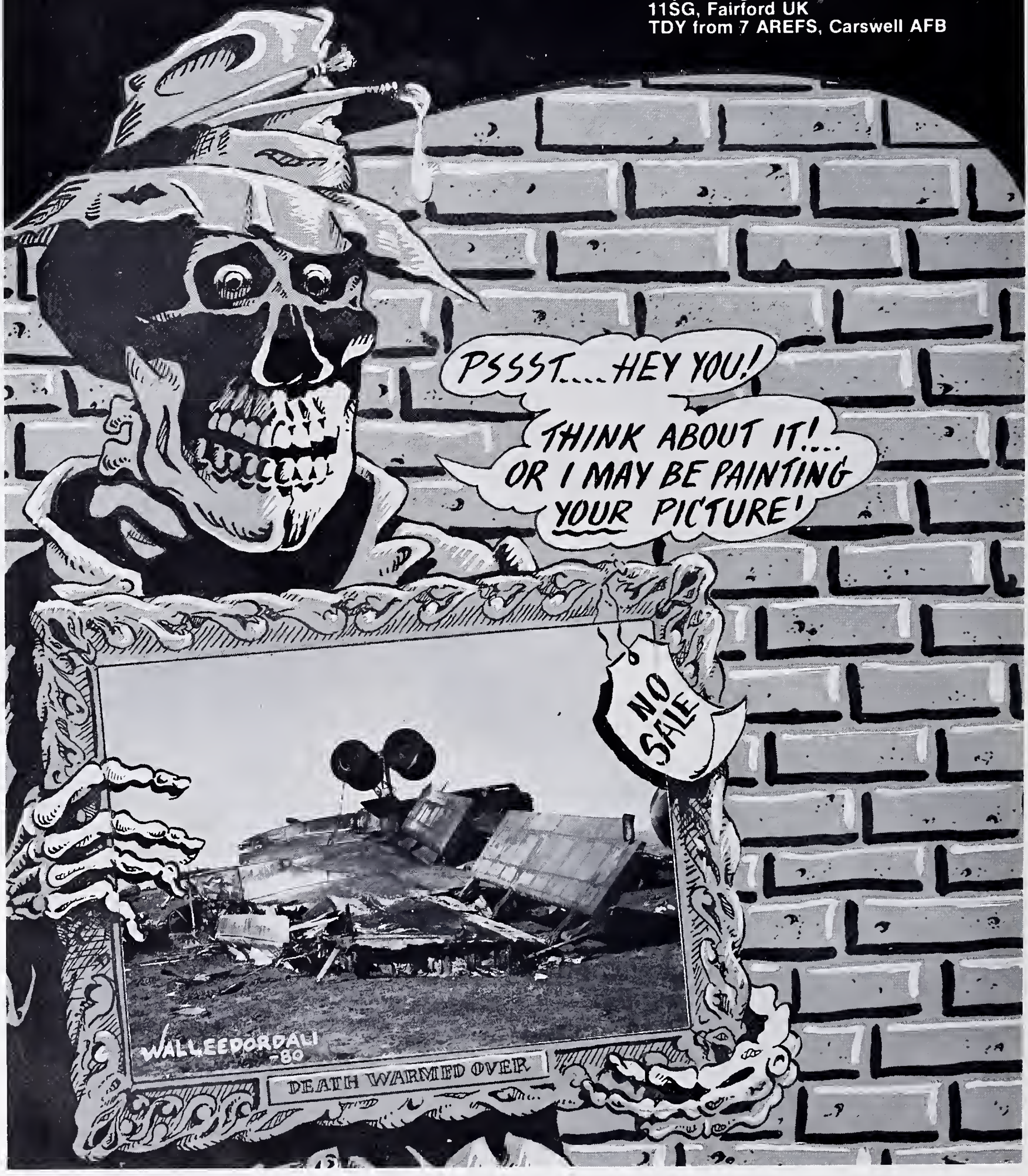
FAA envisions that as more sophisticated RNAV equipment is introduced, area navigation will come to be used in all phases of flight. Current use is primarily enroute, but RNAV SIDs and STARs will become increasingly important. Busy terminal areas often publish preferred departure and arrival routes as required by local traffic flows. As of this writing, the first portion of the preferred route from Andrews AFB to Robins AFB, Georgia, was as follows: ADW CSN CSN239 GSO024 J37 SPA. This departure looks fairly simple when the chart in Fig 3 is available. Remember, however, that the crew flying this departure will be operating in a very busy environment and the radial intersection is not indicated in any way on the enroute chart. The seeds of navigational error are certainly there! Had this been an RNAV departure with waypoint coordinates published for each turn point, the margin for error would have been greatly reduced. In addition, departure route changes are more easily accomplished by simply publishing a revised series of waypoints — placing aircraft "on any desired course."

Sophisticated RNAV equipment — especially when vertical navigation capability is included — will provide greatly improved means of instrument approaches as compared with non-precision approaches now used. Where precision approaches are available, terminal arrival routes will be designed for efficient traffic flow to the final approach aid — normally ILS. The typical RNAV arrival and departure route configuration will appear as shown in Fig 4. Each of the small circles represents a waypoint. If a precision approach were not available, arrival waypoints would take the aircraft all the way to the approach end of the runway and also provide for a missed approach.

RNAV-equipped aircraft will assume a greater share of the airspace until area navigation becomes the rule, rather than the exception. Hopes for this system's contribution to safety and capacity for additional traffic are high and appear to be justified. FAA AC 90-45A contains more in-depth information on RNAV system requirements and equipment performance specifications.

the cost of a CRASH

Capt George R. Thomson, Jr.
11SG, Fairford UK
TDY from 7 AREFS, Carswell AFB



The long term costs of a fatal aircraft accident are more serious and insidious than you might think. Each mishap means we may each lose a little confidence in our abilities, our machines, our training, and our co-workers. Families impose subtle pressures on their airmen to do something else safer; thus separations may increase even though the real reason for the separation is never expressed.

Also, the public may lose confidence in our ability to do what we are paid to do, and our potential adversaries can develop a perception of weakness. So, with every accident our credibility can slip a little and thus our ability to carry out our mission to maintain peace. But that is not all. Insidious costs to SAC supervisors, managers and aircrews continue as each accident is investigated. Boards are convened, meetings are held, manuals, tech data and training methods are reviewed or changed, checklists are rewritten, supervision is increased and the aircrews are briefed, trained, or tested even more.

Many times valid changes are made, but we might change simply as a reaction or demand that something be done. Countless man-hours might be expended and management effort which could be devoted to other areas is misdirected.

Investigation boards tell us that aircraft accidents are caused by design deficiency and material failure, but pilot or crew error is by far the cause most often listed. Still, wouldn't it be inaccurate to just lump all aircrew errors into one "pilot error" category? Some pilot errors are what I would call honest human error because the pilots were doing everything they were trained to do just as well as they could, but the odds, such as bad weather, equipment failures, lack of experience, fatigue, darkness, etc., were too great and their abilities were exceeded.

There is another category of pilot error which comes from a simple lack of flying discipline: taking off into thunderstorms, taking off with gust locks or down locks installed, running out of fuel, flying into the ground because of a slight distraction, landing long, attempting to go around then aborting (indecision), aborting after rotation speed with no indication of thrust loss or controllability loss, stalling out, intentionally flying into thunderstorms. The list goes on and each time we read about an aircraft mishap we shake our heads in disbelief. How many times must we relearn the same old thing?

How close have you been to having a mishap because of a simple lack of flying discipline? When was the last time you did your checklist from memory, or combined a few steps, or changed the order a little? Have you really been mentally prepared for an engine failure on takeoff? Are you really ready to take the airplane from your copilot or student when you are supervising landings, or do you simply assume he won't do anything rash?

When was the last time you got four hours of sleep before a flight, had scotch and cigarettes for dinner and black coffee for breakfast? How often have you passed around the latest reading material during a flight and the nav finally gets to read it during practice approaches while the boom sleeps on the floor of the cargo compartment?

Your supervisors cannot give you flying discipline. It must come from within you. Flying discipline is merely self-discipline extended to the cockpit.

Self-discipline may be boring and it may take courage. You never get many points for being the last one out of the chocks, or having half the wing staff watch the clock tick through your takeoff time while you wait for a thunderstorm to depart, or a maintenance specialist to arrive or a ceiling to lift, or a slow copilot to recheck the takeoff data. If you really want to be popular, try telling your crew to clean up their act sometime. It's not easy. It is a lot easier to ignore the whole thing. Meticulous attention to detail takes self-discipline and both detail and discipline are essential to flying safety.

The well disciplined crew is easy to recognize. They are organized, neat, on time, fit and well rested when they report to fly. Their mission planning is accurate and detailed. They pay attention to the weather briefing and really check the NOTAMS. They know and use all technical data and checklists. They wear ear protectors and gloves when they preflight. They work quickly and quietly. The pilots' seats are adjusted and checked so both pilots are physically able to control the aircraft. They review takeoff emergencies and are mentally prepared for them. In short, their meticulous attention to detail and their high standards demonstrate discipline and results in safe flying.

The Air Force invests a lot of time and money in each crewmember. We are selected, motivated and trained better than any crew force in the world. We fly some of the most sophisticated machines made. We have physicians, dentists, engineers, air traffic controllers and maintenance specialists to take care of us and our machines. We are tested, briefed and supervised constantly, and yet in spite of all that money and time when the hatch is closed, the responsibility for flying discipline rests squarely with the crew.

Crewmembers do not need any new rules, checklists or supervision; they simply have to use the ones they already have. Each crewmember must know the single prescribed standard for peacetime operation and exercise the flying discipline to maintain that standard this time, next time, and every time.

YOU AND THE 781

Continued from Page 5

box — but nowadays this situation is rare.

Almost all aircraft (especially aging, large, multi-engine aircraft) fly with known discrepancies. Many factors cause this including back ordered parts and insufficient down-time for maintenance.

For an aircraft with known discrepancies to be authorized to fly, an exceptional release is required. An exceptional release is required before flight anytime a Red Dash or a Red Diagonal appears as the last entry in the Status Today column of the 781H. (Remember, under no circumstances will a release be granted when the aircraft status is indicated by a Red X). The exceptional release signifies that sufficient investigation has been made to certify that discrepancies covered by the red symbols will not render the aircraft unsafe for flight. The person who signs the exceptional release must be a duly authorized maintenance officer or nine-level noncommissioned officer.

Keep in mind that the person signing the exceptional release is certifying the safety of the aircraft from a maintenance perspective. This person may or may not be aware of equipment requirements for your specific mission. For example: inoperative air refueling equipment is not sufficient reason to place the aircraft status under a Red X condition. However, you may require aerial refueling for successful accomplishment of your mission. In this case, maintenance personnel are justified in releasing the aircraft for flight, but you would still require these discrepancies to be properly cleared prior to accepting the aircraft. Check your mission requirements.

Upon mission completion, the flight crew is responsible for entries in both Part A and Part H of the 781. Documentation is also required for ground aborts.

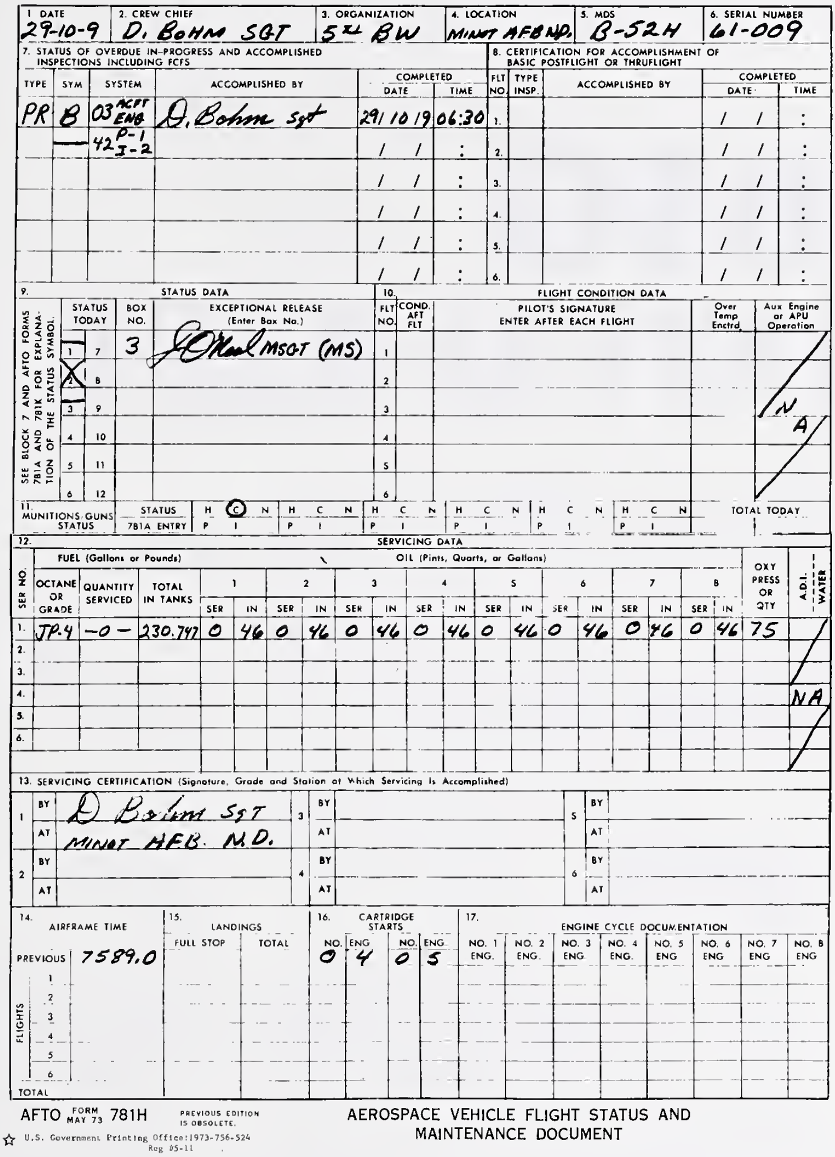
Ground abort discrepancies will be documented on the 718A by aircrew personnel only. The first discrepancy in such cases will be preceded by the notation "No Flight — Ground Abort." No entry by the flight crew is required on the Part H when a ground abort occurs.

The flight crew will use Part A to enter all discrepancies noted before, during, and after each flight. Under no circumstances is more than one discrepancy to be entered in each block. However, as many blocks as necessary may be used to completely describe a single discrepancy.

After each discrepancy has been entered, the pilot or aircrew member will enter his/her signature and grade in the "Discovered By" block. Recent tech order changes require a signature for each and every discrepancy, not just the last discrepancy entered. The proper signature for maintenance documents consists of the first-name initial, last name, and grade: for example, C. Forney, Capt.

The Aircraft Commander is further responsible for postflight entries on the Part H. The Flight Condition Data Block will reflect the total number of discrepancies (or OK flight) and the pilot's signature after each flight. The servicing data block will reflect the total number of pounds of fuel onloaded, offloaded, or dumped. The pilot or other crewmember will sign the "Servicing Certification" blocks corresponding to entries in the "Servicing Data" block. Entries are not required to document the quantity of fuel in tanks when engines are shut down upon mission completion.

The pilot is also required to document total landings, full stop landings, cartridge starts by engine



1 DATE 29-10-9
2. CREW CHIEF D. BOHM SGT
3. ORGANIZATION 5th BW
4. LOCATION MINOT AFB ND.
5. MDS B-52H
6. SERIAL NUMBER 61-009

7. STATUS OF OVERDUE IN-PROGRESS AND ACCOMPLISHED INSPECTIONS INCLUDING FCFS / 8. CERTIFICATION FOR ACCOMPLISHMENT OF BASIC POSTFLIGHT OR THRUFLIGHT

TYPE	SYM	SYSTEM	ACCOMPLISHED BY	COMPLETED DATE	COMPLETED TIME	FLT NO.	TYPE INSP.	ACCOMPLISHED BY	COMPLETED DATE	COMPLETED TIME
PR	B	03 ACFT ENG	D. Bohm sgt	29/10/19	06:30	1.			/ /	:
	—	42 P-1 I-2		/ /	:	2.			/ /	:
				/ /	:	3.			/ /	:
				/ /	:	4.			/ /	:
				/ /	:	5.			/ /	:
				/ /	:	6.			/ /	:

9. STATUS DATA / 10. FLIGHT CONDITION DATA

SEE BLOCK 7 AND AFTO FORMS 781A AND 781K FOR EXPLANATION OF THE STATUS SYMBOL.

STATUS TODAY		BOX NO.	EXCEPTIONAL RELEASE (Enter Box No.)	FLT NO.	COND. AFT FLT	PILOT'S SIGNATURE ENTER AFTER EACH FLIGHT	Over Temp Enctrd	Aux Engine or APU Operation
1	7	3	J O'Neal MSGT (MS)	1				
X 2	8			2				
3	9			3				N/A
4	10			4				
5	11			5				
6	12			6				

11. MUNITIONS GUNS STATUS							
	STATUS	H [✓ C] N	H C N	H C N	H C N	H C N	H C N
	781A ENTRY	P I	P I	P I	P I	P I	P I
TOTAL TODAY							

12. SERVICING DATA

SER NO.	FUEL (Gallons or Pounds) OCTANE OR GRADE	QUANTITY SERVICED	TOTAL IN TANKS	OIL (Pints, Quarts, or Gallons) 1 SER	1 IN	2 SER	2 IN	3 SER	3 IN	4 SER	4 IN	5 SER	5 IN	6 SER	6 IN	7 SER	7 IN	8 SER	8 IN	OXY PRESS OR QTY	A.D.I. / WATER
1.	JP-4	-0-	230.747	0	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46	75	
2.																					
3.																					
4.																					NA
5.																					
6.																					

13. SERVICING CERTIFICATION (Signature, Grade and Station at Which Servicing Is Accomplished)

1	BY	D Bohm SGT	3	BY		5	BY
	AT	MINOT AFB. N.D.		AT			AT
2	BY		4	BY		6	BY
	AT			AT			AT

14. AIRFRAME TIME		15. LANDINGS FULL STOP	TOTAL	16. CARTRIDGE STARTS NO.	ENG	NO.	ENG	17. ENGINE CYCLE DOCUMENTATION NO. 1 ENG.	NO. 2 ENG.	NO. 3 ENG	NO. 4 ENG.	NO. 5 ENG	NO. 6 ENG	NO. 7 ENG	NO. 8 ENG
PREVIOUS	7589.0			0	4	0	5								
FLIGHTS 1															
2															
3															
4															
5															
6															
TOTAL															

AFTO FORM MAY 73 781H PREVIOUS EDITION IS OBSOLETE.

AEROSPACE VEHICLE FLIGHT STATUS AND MAINTENANCE DOCUMENT

☆ U.S. Government Printing Office:1973-756-524
Reg #5-11

FIGURE 2

Part H summarizes the aircraft status. See text for entries required by the flight crew.

number, and engine cycles which occurred during flight. Cartridge start documentation is also required for alert force exercises.

Armed with the foregoing information and your workday experience with the 781, you will be able to understand the information presented as well as the information you are to contribute to the AFTO Form 781. So now you don't need to ask the questions:

What is so exceptional about an exceptional release?

Which is more serious: a Red Dash or a Red Diagonal?

Whatza PR? BPO? TH?

If I don't fly it, do I have to write it up?

You know — don't you?

ABOUT THE AUTHOR

Major David C. Miller has extensive field experience in both the aircraft operations and aircraft maintenance career fields. He has been instructor qualified in both the KC-135 and B-52 aircraft. His experience includes being chief of wing standardization and chief of wing quality control. He recently returned from Clark AB, Philippines, where he was maintenance control officer, 3d Tactical Fighter Wing. He is presently assigned to Minot AFB, as chief of B-52 standardization.

BIG INSTRUMENT

What if...

Major Tom Miles
Captain Rhett Cooper
Captain Tome Walters
1CEVG, Instrument Division
Barksdale AFB, Louisiana

"What if" . . . is a useful game to learn to handle problems not yet encountered. An airborne surprise that you've already what if'ed is not really a problem. You move smartly to Plan B and wind up looking like Orville's first IP.

In the instrument area, folks seldom have a problem when things go as planned. But if a flag pops out or the DME tumbles . . . well, to put it politely, sometimes confusion reigneth.

This month, we have five What If questions for you. The topic is an ILS approach. We'll make it a for-real instrument test and start by saying you are in the weather. Now you can't choose to go visual and press on.

1 — What would you do if you got a course warning flag (B-52) or a Nav flag (KC-135) on an ILS final?

Ans: Discontinue the approach and execute a missed approach. Request radar vectors to a different type approach. The flag indicates a problem either with the ground equipment or your airborne equipment and the signal is unreliable.

The question is sometimes brought up of immediately transitioning to a different type approach. We can't give an unequivocal NO to that, but we would like to discourage it. If you choose to go that route, you assume full responsibility for being able to make the transition and safely fly the approach.

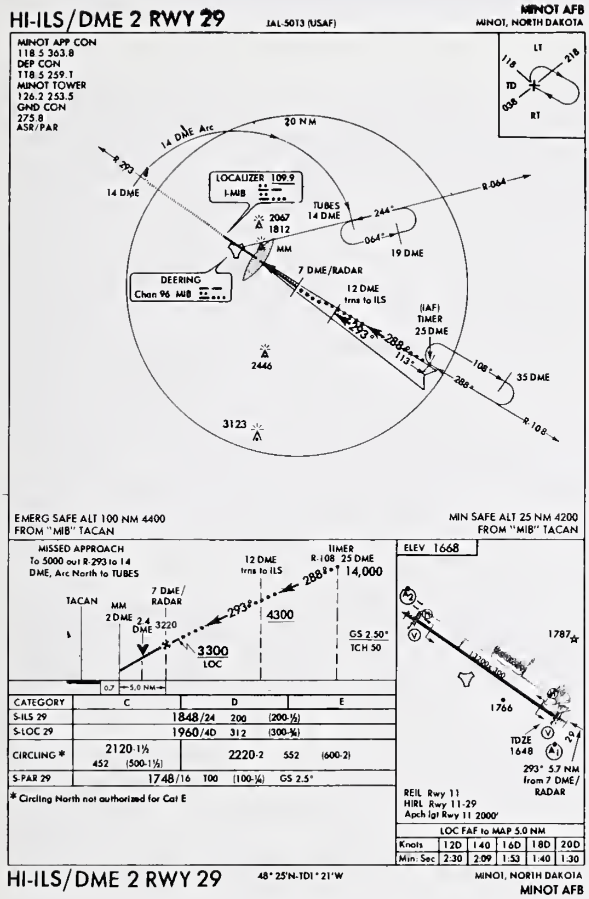
2 — What if your CDI goes full scale deflection on final?

Ans: Again, discontinue the approach and go missed approach. Request vectors and try it again. AFM 51-37 does not allow you to continue the approach if the CDI is recaptured, as it does with the glide slope.

Strong crosswinds and the narrow, solid state ILS course width can play havoc with course centerline control. Have your navigator volunteer the drift inbound to the final approach fix and start out ahead of the game.

3 — What would you do if you got a glide slope warning flag on an ILS final?

Ans: You have a number of possible options. First, if you're flying an aircraft with dual ILS displays (such as the KC-135 Collins FB-109 system) a quick check of all other indicators would be in order. If **your** warning flag was the only one in view and you were still receiving a good identifier, then simply transfer control to the other pilot and complete the approach.



CATEGORY	C	D	E
S-ILS 29	1848/24 200 (200-½)		
S-LOC 29	1960/40 312 (300-¾)		
CIRCLING *	2120-1½ 452 (500-1½)	2220-2 552 (600-2)	
S-PAR 29	1748/16 100 (100-¼) GS 2.5°		

* Circling North not authorized for Cat E

LOC FAF to MAP 5.0 NM					
Knots	120	140	160	180	200
Min: Sec	2:30	2:09	1:53	1:40	1:30

Figure 1

Second, you can continue to localizer minimums if you thought to start the timing at the FAF. That would not be necessary if the localizer approach terminated at a published fix. But most LOC and VOR approaches do not have a published missed approach point. They depend on timing. This is another technique for a sharp navigator to back up the pilots.

Third, if you had requested radar monitoring, a quick transition to a PAR might be possible.

Finally, a missed approach is always an alternative. Depending on the situation, it might be your first choice, or it might be your last alternative if you are unable to transition to another approach.

Having a Plan B in your hip pocket that you've prebriefed to the copilot and navigator could make the glide slope flag problem easy to handle.

4 — What would you do if you got full scale deflection of the glide slope indicator (a) above the glide slope, and (b) below the glide slope?

Ans: a — AFM 51-37 says do not descend below localizer minimums if you go full scale above the localizer. If you can recapture the glide slope with less than full scale deflection, you can continue to decision height.

b — Once you reach full scale deflection below the glide slope, you might be in a heap of trouble — getting close to one of those cumulogranite clouds. 51-37 tries to protect you with a margin of safety when you start getting low. You may not descend below localizer minimums once you exceed one dot (half scale) deflection below the glide path. If you did not make an aggressive correction once you reached one dot to regain the glide path and you watch the needle hit the top of the case, we suggest a missed approach is most definitely in order. You are behind and getting behinder. Any other choice on your part is grounds for cancellation of your reserved room at the retired pilot's home.

5 — What would you do if you were flying the HI-ILS/DME 2 Rwy 29 at Minot AFB (see figure 1) and the DME began tumbling?

Ans: First, you need to know that the slash (/) indicates that more than one type of equipment must be used for the approach; in this case, ILS and DME. On the surface then, the answer is to discontinue that approach.

But let us explain some of the factors in approach design and you will see that you might be able to fly the ILS final. First, an approach consists of four segments: initial, intermediate, final, and missed approach segments. DME is needed for each of those segments for this approach. Note the final approach fix here says 7 DME/RADAR. The question usually asked is "Can I fly the approach without DME if I am radar vectored to glide slope intercept?" The answer is a qualified yes.

The qualification is that you coordinate climbout instructions ahead of time. Notice the published missed approach instructions are "To 5000 out R-293 to 14 DME, Arc North to TUBES." Difficult to execute without a functioning DME, wouldn't you say?

Can you fly the ILS final and land at Minot? If you can receive radar vectors to the glide slope intercept point, positively identify that point by ground radar, and coordinate some climbout instructions that don't require DME, yes you can.

CFIC Corner

FLEXIBILITY

The Key to Effective Instruction

MSgt Benny Heald
Central Flight Instructor Course
Castle AFB, CA 95342

While this article is written with the Instructor Boom Operator and his student in mind, many of the concepts and techniques discussed could be useful for any Flight Instructor.

Let me give you a hypothetical situation. You are a newly graduated CCTS Boom Operator, you show up to mission plan your first category qualification flight with F-4's. You have been told your instructor is Sgt Doe, but he won't be in until 9 o'clock because of a dental appointment. You proceed with the form 365F, co-pilot's chart, fill in the 781, and wait. About 11 o'clock Sgt Doe shows up, apologizes for being late, checks your paperwork as he gripes about being selected for the mission, and spends 30 minutes recollecting what an F-4 looks like and telling war stories concerning F-4's and how they can eat you up. Now that he has you thoroughly apprehensive, Sgt Doe tells you he is in kind of a hurry because he has to take his daughter to her dancing lessons, so order him a number 6 Box Lunch, study your refueling tech order, and he will met you at bus time and answer any questions you might have.

The day of the Flight arrives and you're at the airplane. Your preflight goes fairly well except that Sgt Doe is following you so closely that he's really making you nervous. The only comment he's made to you is that he'd like you to point to all the switches and valves the checklist calls for you to check, so that he'll know you are checking them. He makes a few notes and says very little. The receivers show up on schedule, Sgt Doe demonstrates a contact, and now its your turn. After a few "Braille" contacts you start to get the idea.

Well, we're back at the squadron now, paperwork is complete and you're tired. Sgt Doe asks if you have any questions, and tells you that you made a few errors in preflight because "that's not the way we do it here." Writes "Good Flight" in the remarks section of the TAPR, recommends one more day flight with an F-4 and gives you tomorrow off (coincidently this also gives Sgt Doe tomorrow off).

How much successful transfer of learning actually took place? The student may have learned something, but with proper instructor technique and preparation he certainly could have learned considerably more.

Sgt Doe in this instance didn't show any real dislike for instructing, but his desire to instruct certainly bears scrutiny.

Now, let's go back to mission planning day and see what a difference an effective, enthusiastic instructor can make! First of all you wouldn't make a cross-country trip without knowing where you are and where you're going. This is exactly why the instructor is required to sign the student TAPR certifying that he has reviewed the student's training folder, prior to flight. When the instructor completes the remarks section of the TAPR he should bear in mind that the information he leaves there may be the only information any subsequent instructor has on which to base his instruction.

Probably the most significant contribution the instructor can make to create a climate conducive to learning is to establish rapport with the student. Rapport is a harmonious relation, a cordial cooperation which embraces *continuity* and *change,* a process not a technique, a bracing relationship which does not encourage dependency.

During the mission planning day the instructor will brief the student on exactly what is expected of the student, what the mission objective is, how it will be achieved, give a description of each maneuver or exercise, and the purpose of each exercise. In the instance we are discussing, progressing from the known to the unknown would be very effective. The student has refueled B-52's so we can progress from his knowledge of that type of receiver to the F-4's, showing the difference in techniques and procedures. The key word here is "Empathy." The instructor should consider what misconceptions and apprehensions the student may have.

Half of the training the student receives takes place during a comprehensive student briefing and critique. The instructor must bear in mind that the amount of information given to the student must depend on the level of knowledge of the student. If the student is an experienced, knowledgeable individual, the instructor can go into the more complex aspects of our job. If the student is at the other end of the spectrum, a few well developed items would be more appropriate.

Let's assume that the enthusiastic instructor is now at the aircraft, with the student, for preflight. One way he can ensure the student accomplishes all checklist items, is to have the student point to each switch, lever etc., as the checklist calls for it, but wait a minute! Why should the student be forced to change his procedures for the benefit of the instructor? A good instructor should be able to position himself in such a manner that the student's performance is visible, and still not be in the student's way. The instructor should take enough notes to ensure a comprehensive critique, keeping in mind that many items can be corrected on the spot. This discussion, if accomplished properly, may serve to put the student at ease. The good instructor understands the difference between techniques and procedures. Procedures being a mandatory way of accomplishing a task as dictated by a Technical Order, and technique is an optional way of accomplishing a task. The instructor can require the student to perform a procedure as prescribed by the T.O., but technique must be "sold" to the student with full explanation that it is a suggestion. Many instructors have lost rapport with their students by requiring the student to perform a technique in a certain manner merely because the instructor prefers it, or has always done it that way.

If you are an instructor, take a long look at how you are teaching and remember how you felt as a student. With the soaring cost of fuel, training missions are becoming fewer and farther between. The effective instructor will ensure that the Air Force and the student get a better return on their investment of money and effort.

ASSIGNMENT: EIELSON

Continued from Page 7

heater to fight off the cold. As for yourself, you become intimately familiar with all the cold weather gear those guys from Carswell and March never take out of the plastic bags. Most streets are solid ice. Instead of going to the BX first and then the commissary because the ice cream will melt, you can hit the commissary first but be sure to put the lettuce on the bottom so it doesn't freeze. To preserve everyone's sanity, the winter months are filled with many scheduled social activities and impromptu get-togethers. Let it suffice to say that the winter, while not especially pleasant, is survivable.

The good news is summer. By May the ice and snow are gone from lower elevations and the fish start biting the mosquitoes back. June is the worst month for mosquitoes but is also one of the best for fishing. The base proper is fairly clear of mosquitoes due to regular spraying of insecticide. The days are long with nearly 60 days of continuous light. Rain is common in the summer but usually passes after a couple of days. The rest of the time the temperatures are usually in the seventies or eighties, there is no wind and the humidity is around 20%. Many days are so perfect you feel as comfortable as you would in a domed stadium. There are innumerable places within easy reach of Eielson that have good to great fishing. If you own or rent an airplane, the possibilities increase tenfold. Consequently, the aero club on base is very active. In the fall, fishing is still good but hunting season takes precedence for most. There are several big game species to hunt as well as numerous waterfowl and upland game birds.

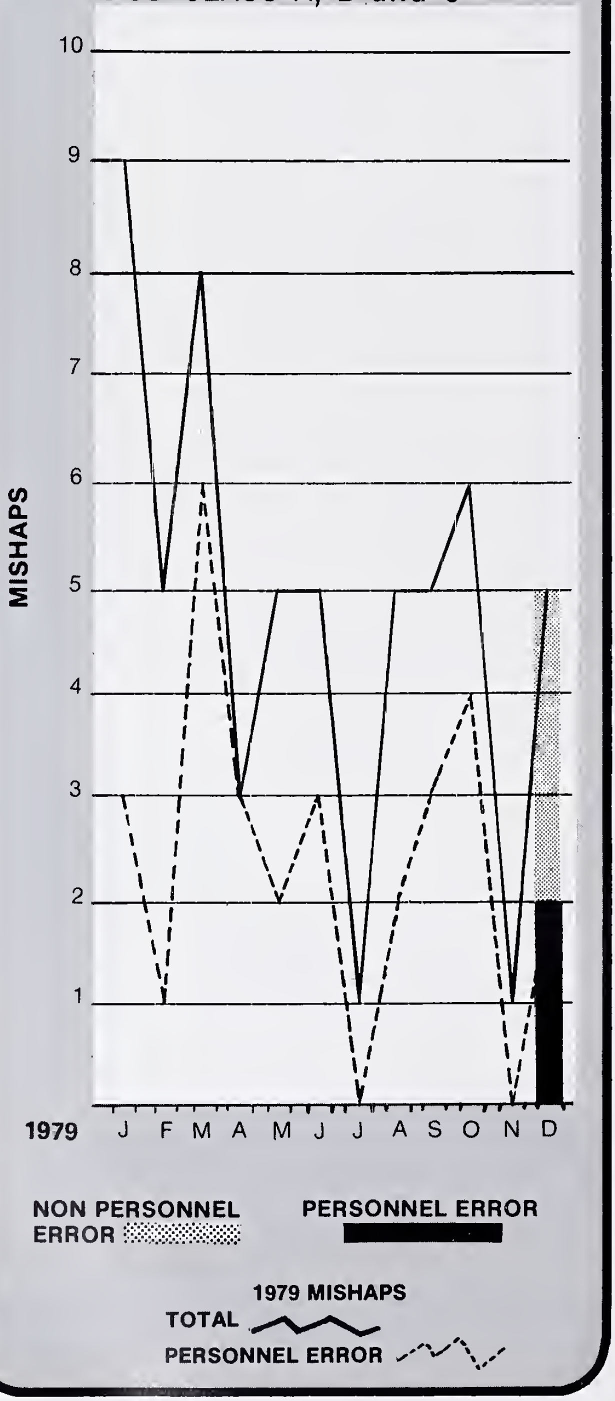
There are two categories of SAC crewmembers who enjoy their tour at Eielson. One type revels in the outstanding mission of the squadron. It is at minimum as challenging and rewarding as any mission SAC flies today. The other type is the dedicated outdoorsman. He recognizes the unlimited opportunities available to him by living in a state that is for the most part totally undeveloped. He can fill his freezer with fresh salmon (five kinds), trout or pike that he caught himself. He can hunt moose, black bear, grizzly bear, mountain goat, dall sheep, elk, deer, and caribou, all for little more than the price of getting there. The family can pick several gallons of wild blueberries, blackberries, raspberries, and cranberries right on the base. If you fancy yourself a photographer, the subjects are inexhaustible. The scenery in Alaska is second to none. Brilliantly colored wild flowers literally blanket the state.

If you can handle the TDYs and the winters, then the mission and outdoor opportunities in summer make it worth it. Believe it or not, over half the crewmembers end up extending their tours here, including the bachelors.

1979 YEAR END

Missile Mishap Report

DOD CLASS A, B and C



DO YOU KNOW WHAT PCBs ARE?

The primary effect of polychlorinated biphenyl (PCB) on people is an inflammatory rash of the skin following skin contact and possible liver damage following substantial internal doses. PCB mixtures are mixtures that contain .05% or greater of PCB chemical substance. PCB is present in all electrical capacitors unless marked "No PCB." Electrical capacitors containing PCB are part of all RFI filters used in missile sites.

Due to the hazardous nature of this substance, all tasks or equipment where contact is possible should be evaluated to determine if PCBs are in fact present. PCB is an odorless, colorless, mobile liquid. If PCBs are found to be present, some or all of the following safety precautions will apply.

Safety Equipment. Protective equipment to be used: neoprene gloves, bib type apron, and full face shield. When a large spill is encountered self-contained breathing apparatus is required. If working in an enclosed area where self-contained breathing aparatus is not practical, use a chemical respirator (organic vapor, FSN 4240-01-015-5194). For very small amounts of spilled PCB, a respirator may not be needed but is encouraged, especially in an enclosed area.

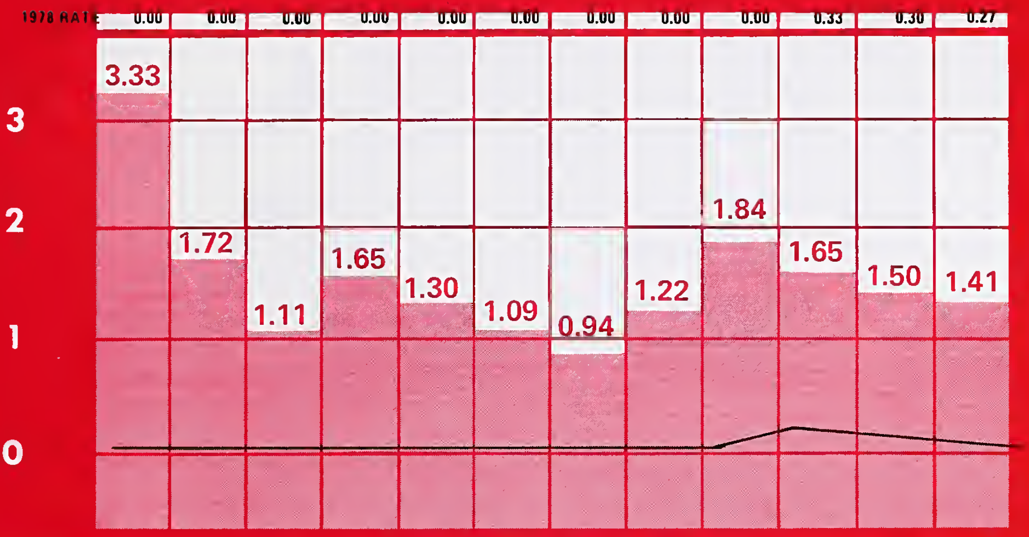
Cleanup Procedures. Use protective equipment, absorb spill in dry rags. Wipe surfaces using kerosene, xylene, or toluene as a solvent until all traces of PCB are removed. Deposit cleanup materials in standard steel one gallon or five gallon metal cans with metal to metal lid seals such as a metal paint can, mark the contents and route to storage/disposal area designated by the base bioenvironmental engineer.

First Aid. In case of contact with PCB, wash thoroughly with soap and water and get medical attention. Remove contaminated clothing and treat as contaminated waste. Any item including water that comes into contact with PCB must be returned to base for disposal. It is imperative that safety procedures be followed when cleaning up a PCB spill for personnel safety and health as well as environmental impact.

It is important to report PCB spills to the base bioenvironmental engineer. In addition, SEM 21-SM80-6194 and Federal Register directives require that on each panel located in Minuteman LCF and LF sites that contain EMP/RFI filters a PCB warning label be attached. — *TSgt Larry Balin, 341 SMW, Malmstrom AFB*

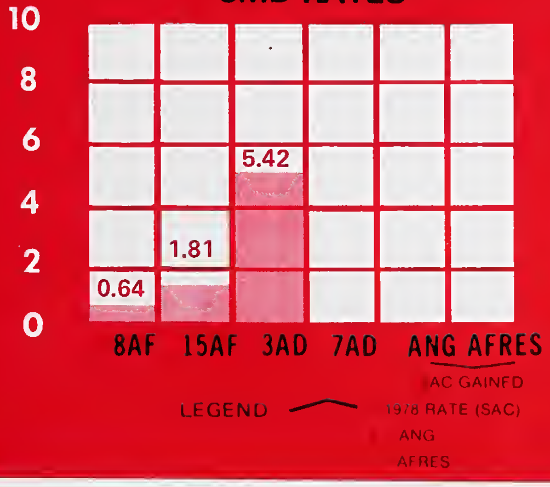
1979 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	1	0	0
1979	1	0	0	1	0	0	0	1	2	0	0	0

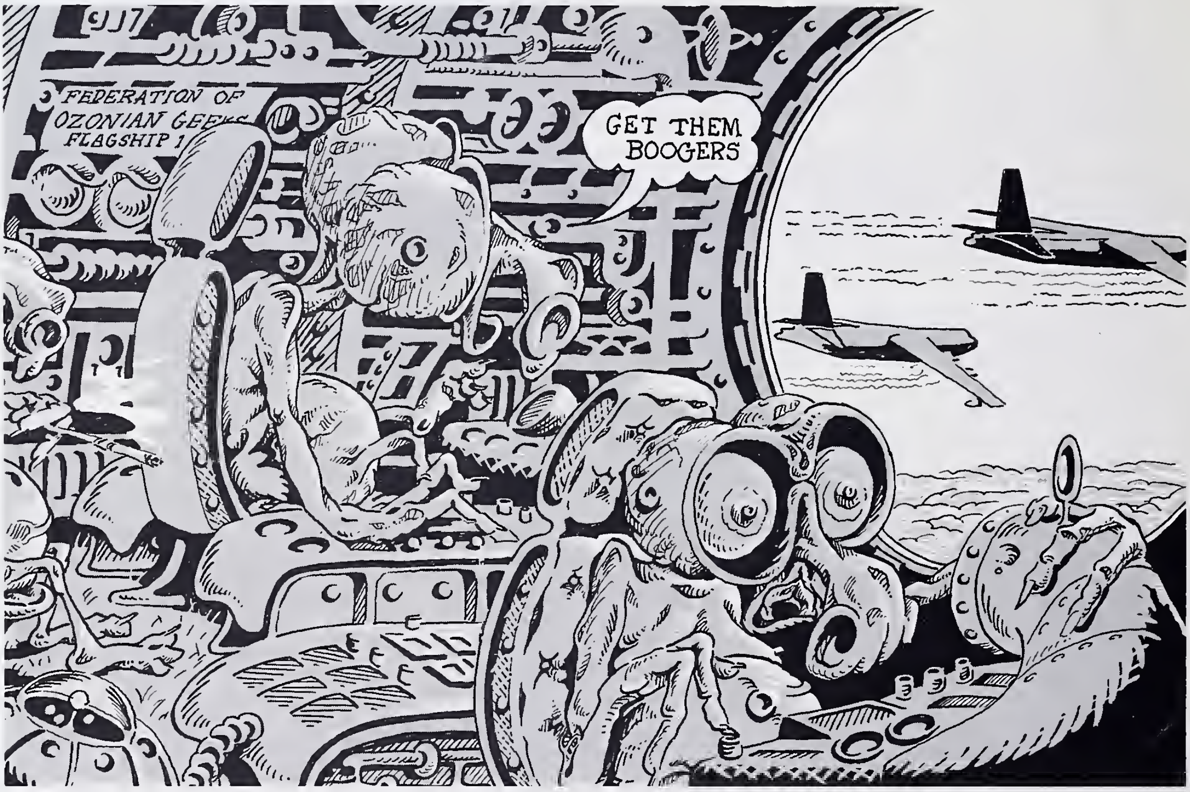
1979 SUBORDINATE CMD RATES



MISHAP STATUS

B-52H	JAN 79
KC - 135Q	APR 79
RC - 135	AUG 79
FB-111	SEP 79
KC-135	SEP 79

OPS HAZARDS



CLOSE ENCOUNTERS OF A DIFFERENT KIND

Capt Ernest D. Blair
906 ARS, Minot AFB

Let's assume you are returning from a mission which took you over the Atlantic ocean. Your flight has been uneventful, but you have elected to climb to FL 410 to conserve fuel. After about two hours your copilot complains about shortness of breath, coughing, and occasional chest pains. You start a descent to a lower altitude and direct the crew to breathe 100% oxygen. After awhile your copilot feels better and the symptoms disappear. What happened? Was it hypoxia? Was it a heart attack? These are all definite possibilities, but no, this is not the case. Your copilot just experienced an encounter, not with the third kind, but of a new-found ozone irritation. Let me explain.

In meteorology the earth's atmosphere can generally be divided into two major regions: the lower atmosphere consisting of the troposphere and the upper atmosphere which starts with the stratosphere. Between the troposphere and the stratosphere is a boundary layer known as the tropopause. When talking about ozone concentrations, the most significant amounts occur at and above the tropopause. The total amount of ozone in the atmosphere and its distribution with altitude varies with latitude, season of the year, and weather conditions. Scientific studies have shown that the concentration of ozone at jet aircraft operating altitudes is highest during February through April in the Northern hemisphere. Additionally, the total concentration and magnitude of seasonal variations of ozone are greatest at high latitudes and least at the equator. Although ozone concentrations in the atmosphere generally increase with altitude, as mentioned earlier, the most significant increases occur at and above the tropopause. By definition, the tropopause is that area where the temperature change does not exceed two-thirds of one degree Celsius per 1000 feet increase in an altitude over a range of 6000 feet. At 45 degrees latitude, the temperature of the tropopause is approximately minus 46 degrees Celsius.

The ozone molecule (0_3) is made up of three oxygen atoms. While oxygen constitutes approximately one-fifth of the earth's atmosphere, ozone is generally much less than one part per million by volume at sea level.

Exposure to ozone concentrations below .3 ppm for about one hour is usually nonsymptomatic. Exposure to concentrations of about .3 ppm causes irritation to the eyes, nose, mouth, and throat. Decreases in night vision have been reported by one researcher for exposure to .2 ppm for three hours or more, although day vision is reportedly unchanged. Concentrations above about .3 ppm can bring about shortness of breath, coughing, and in rare cases, chest pains. The degree of irritation generally increases with increasing levels of ozone concentration, exposure time, and physical activity. While occasional exposures are not dangerous or incapacitating for aircrews or passengers during jet flights, the irritation may be quite annoying. The irritation is temporary at these exposure levels, however, until more is known about this subject, it is recommended that exposure to ozone be minimized.

The following are recommended procedures for minimizing ozone irritation.

- If the planned flight is near or above the tropopause, consider the possibility of encountering high concentrations of ozone.
- The area on the equatorial side of a jet stream generally has less ozone than the area on the polar side.
- In the Northern hemisphere areas associated with anticyclonic curvature of the high altitude winds, i.e., the turning of the streamlines to the right, tend to have less ozone.
- Regions of high tropopause, generally associated with high surface pressure, i.e., a high, tend to have less ozone.
- If possible fly out of the high ozone regions by requesting a lower altitude.
- Breathing through a warm, moist towel or equivalent, which is held firmly around the nose and mouth, may partially relieve the symptoms of ozone irritation.

Even though during the season of high ozone concentrations, only a small percentage of the more than 10,000 daily flights in the United States encounter ozone irritation, it is important for military flyers to know that such a phenomenon does exist.

(Note: The information for this article was supplied to the author by the Jeppensen Company and the FAA.)

IT COSTS VERY LITTLE MORE

Continued from Page 3

have that distinguished them from the Crusaders, from the clans at Culloden, from the desert tribesmen of the Jehad, from the Irish Republican Army?

In one — *Discipline* — the fourth part of what makes up a soldier and distinguishes him forever from being an angry member of a mob. The difference between winning and losing the battle. What you've been learning ever since you were belted for pulling the cat's tail. What the D.I. back in basic training was talking about. What the instructor in your crew training days talked himself flaming well hoarse about.

Discipline. The art of accommodating yourself to rules made by others: to checklists, regulations, policy letters. And, above all, to the spirit of these, to the overriding idea that the mission of the command takes precedence in case of any conflict, real or apparent, with your own ideas.

Note, the key word in that past paragraph: *Accommodate.* Used by choice. "Obey" wouldn't have done it; they had that in the skirmishes mentioned earlier. For proper discipline, and proper bearing in the profession of arms, more than simple obedience is required. You've got to feel the spirit and understand the background; and then — add, of your own free will, just that little bit extra. That bit of dash; that little something that makes the difference between the struggling ants of a slave state and the soldiers of a republic.

That little something extra may be that special *sound* your crew has — even when you know nobody else is listening; it may be that extra check you give your Dash One after posting the latest change; it may be that extra hour you and your crew spend discussing how to handle a possible hairy situation.

Study, Think, Work, and Try — the four operative verbs in any combat crew member's philosophy. Follow them all, and you've got discipline — in its highest sense. Follow them all, and you've got crew professionalism. Miss one, goof off on a couple — you're still a fighting man. After all, you held up your hand and swore the oath, didn't you? But it will never be quite the same. Easier perhaps. Same pay, perhaps. But a man must still look himself in the face — if only while shaving — and it costs very little more to go first class.

Editor's Note: *Thanks to Lt Col Harvey Johnson, 90 SMW, for suggesting the reprint of this timeless article which first appeared in Sep '66 Combat Crew.*

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in AFR 127-2/SS1.

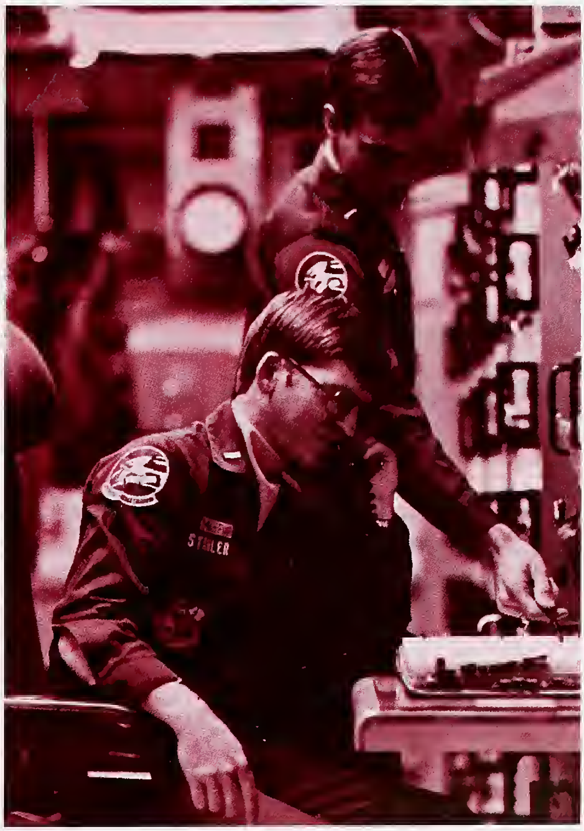
TITAN CREW

Crew E-011, 570th SMS, Davis-Monthan AFB, includes Capt Steven W. Smith, MCCC; 2Lt Richard J. Dibaggio, DMCCC; A1C Shawn M. Kelly, MSAT; A1C Derrick O. Smith, BMFT. During a complete missile recycle at a complex, Crew E-011 displayed superior skill and judgment during an oxidizer vapor hazard. The crew received indications of oxidizer vapor in the launch duct followed by indications of vapor in the silo equipment area and the oxidizer pump room. The crew immediately began the oxidizer vapor hazard checklist and activated the wind direction and speed recorder to plot a toxic corridor. In coordination with wing technical personnel, the crew initiated the investigation with a portable vapor detector and appropriate safety gear. When the two enlisted personnel attempted silo penetration, they observed a haze at the end of the long cableway and requested hazard team assistance. Upon arrival, the hazard team discovered a pressure cap below a Stage 1 oxidizer prevalve had leaked, and that damage to Stage 1 engine was imminent. The team decided an immediate download of Stage 1 oxidizer was required. While the hazard team prepared its equipment for the download operation, the crew obtained the necessary information covering the procedures to be followed, emergency safing and back out instructions. The operation was completed in a timely and safe manner. The performance of Crew E-011 contributed immeasurably to the expedient and safe completion of this critical operation. The timely reaction and strict adherence to proper procedures precluded damage to the Stage 1 engine and are indicative of the superb proficiency of Crew E-011, thus warranting its selection as SAC Combat Crew of the Month.

MINUTEMAN CREW

Crew R-102, 44th SMW, Ellsworth AFB, including 1Lt Lawrence H. Stahler and 2Lt David B. Metzger, is SAC Crew of the Month. Recently they acted with boldness and exactitude in response to a serious mishap at a launch facility. The chief of a team performing a tape loading operation called to report that one of his people had received a serious head injury, causing a great loss of blood and a possible concussion. Lt Stahler immediately directed the injured man be treated for shock and that an attempt be made to control the bleeding. At the same time, Lt Metzger contacted the flight surgeon and briefed him on the problem. The surgeon and the crew decided the injured man should be returned to the strategic missile support base immediately. Lt Stahler directed a maintenance crew just arriving at the facility to take the injured man back to the base. By handling the return in that fashion, the crew maintained launch facility security and finished their assignment. Once the immediate medical emergency was under control, the missile crew informed both job control and the wing command post of the mishap. Together they determined that the SAC two-man policy, a crucial element in nuclear safety, had not been violated by the flurry of activity in the launcher tube.

Crew R-102 is skilled and innovative and reflects great credit on the Strategic Air Command.



MAINTENANCE MAN

SSgt Thomas A. Stastny, 92d OMS, Fairchild AFB, is named Strategic Air Command Maintenance Man of the Month for his outstanding technical competence, initiative and leadership abilities. As a bomber inspection team chief, Sgt Stastny developed and implemented a training program which produced better qualified crew chiefs by providing more detailed knowledge of aircraft systems. His technical expertise and supervisory competence were also proven by the performance of his inspection team in achieving zero defects ratings on ten consecutive BPO quality verification inspections. Sgt Stastny represented the 92d BMW at the GIANT SWORD competition and earned the title of Best OMS Crew Chief during the competition. He is a dedicated NCO and an asset to the United States Air Force.

ACE TOPICS

SQUAT, YOU SAY

One of our T-38 premature gear retractions raised some interesting questions. Apparently some individuals were surprised when they learned that you could raise the landing gear lever with weight on the gear and not have a malfunctioning weight-on-wheels squat switch.

It turns out that word-of-mouth and bar talk have been the primary source of aircrew knowledge pertaining to the weight-on-wheels squat switch operation. Without spilling any of my drink I'll try and set the record straight. The landing gear downlock solenoid is activated by a switch on the left main gear (it's the switch mounted on the gear strut cylinder itself). The switch is activated by strut extension and compression thus the weight-on-wheels terminology. When the strut is extended sufficiently, the switch is activated and the landing gear downlock locking pin is withdrawn from the gear handle allowing it to be moved from the down position. Strut pressure (servicing), condition (maintenance) and actual weight on the gear (inversely proportional to lift) all affect strut extension.

The net result is that you may be able to raise the landing gear lever with some weight on the gear. If you do, the gear will try (and probably succeed) to retract. Recently, one of our T-38 crews did just that. Not only did they damage the aircraft ($104,533) but more importantly, they unnecessarily exposed themselves and others to personal injury.

Oh, one more tidbit. The squat switch on the right main gear operates the comm/nav ground cooling blower and the one on the nose gear is to deactivate nose wheel steering during gear retraction. — *Capt Seeley*

WHAT YOU DON'T KNOW CAN HURT YOU

Tell a pilot what's wrong with his aircraft and most can tell you how to correctly handle the situation. Crewmembers are generally very good at applying section 3 of the flight manual once they've analyzed the problem. Analyzing the problem, however, is the most important and all too frequently the most difficult step.

Consider the following:

- *T-38 SAS malfunctions misanalyzed as aileron problems.*
- *Dual control situations (with intercom) mistaken for flight control problems.*
- *Unsafe gear indication mistaken for unsafe gear (even after chase ship confirmed gear down).*
- *An inverter failure in a T-37 misdiagnosed as a hydraulic failure.*

The list goes on and on. To put it in other terms: In 1979, failure to properly analyze the situation and take proper action has cost ATC three destroyed T-38s, four severely damaged T-38s and one destroyed T-37. Fortunately, there were no injuries. This damage equates to about $4,484,000 — dollars we don't have and resources we can't replace.

Simply stated you can know the Dash One cold; remember all the warnings, cautions and notes; but if you haven't figured out how to recognize and analyze just what your problem is, you're just spinning your wheels. Try translating the words in the flight manual into sights, sounds, sensations and gauge readings. That's really the first step in solving and preventing inflight problems. — *Capt Seeley*

SAC SAFETY SCREEN

416 BMW, Griffiss Crew R-04: P Capt Bernard C. Forcier, CP 1Lt Donald L. McCune, IB Capt Peter W. Kippie, NN 1Lt Michael B. Schober, EW Capt John R. Venable, AG A1C Ralph R. Saviola

416 BMW, Griffiss Crew E-118: P Capt Marc J. Neifert, CP Capt Russell L. Newland, NN Capt Eugene P. Schempp, BO SSgt Michael E. Schellerer

410 BMW, K I Sawyer Crew E-24: P Capt George L. Bourne, CP Capt Kermit M. Stuart, RN Capt Grant D. Leljedal, N Lt William M. Balco, EW Capt Roger Young, G Sgt Kendall M. Babbitt

410 BMW, K I Sawyer Crew S-103: P Capt Richard E. Fitzhugh, Jr, CP 1Lt Jerry D. Vanslembrouck, N Capt Walter K. Everly, BO SSgt Roy W. Schufft

509 BMW, Pease Crew S-03: P Capt Donald D. Linke, N 1Lt Donald J. Golding

42 BMW, Loring Crew R-16: P Capt Paul M. Karlowitz, CP 1Lt Ricky W. Gray, RN Capt Perry M. Hicks, N 1Lt Clyde K. Keen, Jr, EWO 1Lt James C. Chamberlain, G A1C Jonathan D. Lovelace

42 BMW, Loring Crew S-102: P Capt Neal T. Couch, CP Capt William Maiorano, N Capt Thomas L. Meade, BO TSgt Bobby E. Langston

42 BMW, Loring Crew S-151: P Capt Francis A. Burns, CP Capt Dennis D. Storck, N Capt Glenn J. Frazho, BO SSgt Michael L. Runyan

9 SRW, Beale Crew E-69: P Maj Richard L. Davies

92 BMW, Fairchild Crew S-01: P Capt David Capotosti, CP Capt Carl H. Margraf, Jr., CP Capt Douglas Nelson, RN Capt Charles G. Masonic, N 1Lt Thomas G. Bowie, Jr., EW Capt Robert K. Butler, Jr., G MSgt Paul A. Black

22 BMW, March Crew E-120: IP Maj James E. Otterbein, CP 1Lt Ramon P. Mata, IN Capt Charles E. Daniel, IS SSgt Robert C. Morgan

92 BMW, Fairchild Crew E-116: P Capt John F. Fox, CP 1Lt Philip E. Benner, N Capt Eugene R. Foose, BO Sgt Perry A. Sauro

5 BMW, Minot Crew S-01: P Maj David C. Miller, CP Capt Andrew E. Jost, Jr., RN Capt Larry McPherson, NN Capt Michael L. Fletcher, EW Capt William J. Carey, AG SSgt Paul R. Hederman

308 SMW, Little Rock Crew R-017: MCCC 1Lt Douglas D. Williams, DMCCC 2Lt Gregorio Cortes, MSAT Sgt Estus L. Groover, MFT A1C Michael J. Greene

351 SMW, Whiteman Crew E-082: MCCC 1Lt Willie C. Dantzler, DMCCC 1Lt Mark S. Loepker

381 SMW, McConnell Crew R-013: MCCC 1Lt Gilly A. Marshall, DMCCC 2Lt David B. Cunningham, BMAT A1C Alex Jahay, MFT A1C Robert J. Benscko

90 SMW, F. E. Warren Crew R-043: MCCC Capt Thomas J. Chudanov, DMCCC 2Lt Carlton M. Witt

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW AFR127-2/SS1.*

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1980-665-145/12

UNIVERSITY OF FLORIDA
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HALL OF FAME

TACTICAL FLYING

OVER TWENTY-THREE YEARS

170 AREFG, McGuire (NJANG)	None

OVER TWENTY-ONE YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	June '58
97 BMW, Blytheville	Aug '58

OVER TWENTY YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59

OVER EIGHTEEN YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61

OVER SEVENTEEN YEARS

11 SG, Fairford	Feb '62
340 AREFG, Altus	Jun '62
96 BMW, Dyess	Aug '62

OVER SIXTEEN YEARS

19 BMW, Robins	Aug '63

OVER FIFTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64

OVER FOURTEEN YEARS

320 BMW, Mather	Jul '65

OVER TWELVE YEARS

92 BMW, Fairchild	Feb '67
55 SRW Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TEN YEARS

5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER NINE YEARS

28 BMW Ellsworth	May '70

OVER SEVEN YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
306 SW, Mildenhall	Apr '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER SIX YEARS

379 BMW, Wurtsmith	Apr '73

OVER FIVE YEARS

931 AREFG, Grissom (USAFR)	Feb '74
189 AREFG Little Rock (ARANG)	May '74
43 SW, Andersen	Dec '74

OVER FOUR YEARS

68 BMW, Seymour Johnson	Sep '75
6 SW, Eielson	Dec '75

ICBM

OVER FIFTEEN YEARS

1 STRAD, Vandenberg	Sep '64

OVER FOURTEEN YEARS

308 SMW, Little Rock	Aug 65

OVER NINE YEARS

341 SMW, Malmstrom	Apr 70

OVER SIX YEARS

390 SMW, Davis-Monthan	Jul '73

OVER FIVE YEARS

351 SMW, Whiteman	Oct 74
91 SMW, Minot	Nov '74

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.